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FIG. 16.—HADDON HALL.

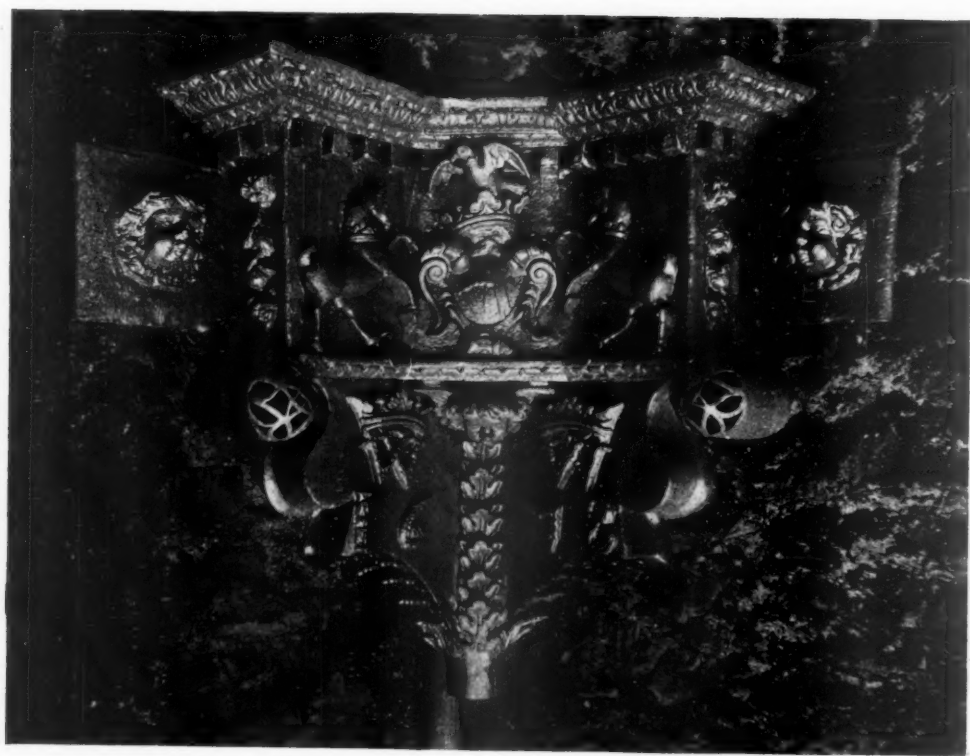


FIG. 17.—BOLTON HALL.

English Lead Pipe-Heads.—II.

FOR the sake of convenience I have divided the history of lead rain-water pipe heads into two periods. The article of last month dealt with the earlier work, and the latest of the examples illustrated, that on Leighton Bromswold Church, is dated 1632.

This division into two periods is naturally much too arbitrary to do more than suggest broadly that in this kind of leadwork there were two main influences—the Mediæval and the Renaissance. Owing to the sporadic working of the new ideas, and the slowness with which they penetrated to the more remote parts of England, there is naturally a great overlapping of styles. A marked instance of this is found at Kendal, Westmoreland, where a head of 1711 much resembles in general treatment the Guildford heads of 1627. The applied ornaments are escallop shells and fleur-de-lys, and there is a parapet of delicate brattished work which is astonishing for 1711. At this date the finish at the top of pipe-heads was almost invariably a heavy and not very interesting cornice. Kendal was remote, and the old manner consequently lingered there.

Old Palace Yard, Coventry, has a remarkable series of leadwork. There is one gutter of about 1580. Seven heads of 1656 and thereabouts receive the discharge from a fine shell-pattern parapet gutter, with dates, initials, and coats of arms interspersed (Fig. 19). Most of the heads have classical cornices of great projection with dentils, but much gothic detail lingers. The Coventry craftsman evidently did not desire to deliver his work from the power of the dog. One head has a running hound, and a pipe-socket has two vigorously modelled spaniels. The building is delightful throughout. The woodwork and plasterwork are full of interest, but dilapidation grows apace, and the little courtyard has a neglected, almost doomed, look, which bodes ill for its survival. A motor-car factory of uncompromising utility and vileness has been added within the last few months. One fears that the success of the English Jugger-naut may soon claim another victim, and one that Coventry can ill spare.

At Poundisford Park, near Taunton, there is a very complete system of rain-water leadwork (Fig. 20). From the valleys at each side of a high-pitched roof the water descends through heads and pipes (obviously recent) into a very pretty horizontal gutter with ornamental top edge. The outlet from this gutter conducts the water into a turretted head (Fig. 18) with pipe discharging into

a handsome lead cistern. The "castle" treatment of the head is so distinct from the stiff feeling of the pots of flowers which, with the date 1671, decorate the cistern, that one is tempted to think the head is earlier. As, however, the Durham head of 1699 (Fig. 21) combines the same "castle" motive with a markedly classical cornice, we may take the Poundisford Park head as probably contemporary with the cistern. We have here a parallel in leadwork to the mingling of the two manners in stonework which appears on the Salisbury chantry at Christchurch and elsewhere. The gutter is notable; the same pattern, but doubled, appears on another house at Taunton. At East Quantocks Head there is a head with a parapet of the same outline, which was evidently a peculiarity of the Somersetshire plumber. I have not found the same outline elsewhere, save in a feeble variation at Stanwick, Yorkshire.

The Durham Castle heads, of which one is illustrated in Fig. 21, have an especial value historically, as showing the pains taken that heraldry should tell its story accurately. A head of 1661 fixed to the south wall of the chapel bears a shield with the arms of the See of Durham alone, which was then vacant. The example illustrated bears on the richly-mantled round shield the arms in pale both of the See and of Bishop Crewe. As Crewe was a baron in his own right, we have as his personal mark the baron's coronet as well as the coronetted mitre of the prince bishops which indicated his office. The labels of the mitre with tassels stand clear of the flat surface of the head, and are unusually narrow. The lower member of the cornice is a delicate bead and reel moulding, the upper an ogee with a rich but shallow classical pattern worked on the face.

The baron's coronet recurs both on the side of the head and on the ear. In the latter case it is enclosed by a moulding which looks like the cast cable which is so pleasant and constant a feature in the old work, but is actually a flat ribbon closely twisted. This device would bear repetition to-day. Unhappily the original lead pipes have been abolished and iron substituted. The altogether odious cast-iron ear, which fastens the socket to the wall, seems a needless barbarity. Of all the offences of cast-iron pipe surely the band ear of this type is the greatest. If it serves no other purpose, though, it is a commentary vigorous enough on the distance we have travelled since 1699.

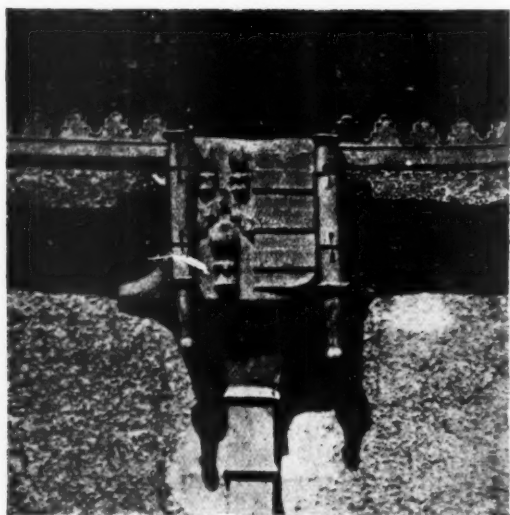


FIG. 18.—POUNDISFORD PARK.



FIG. 19.—COVENTRY.

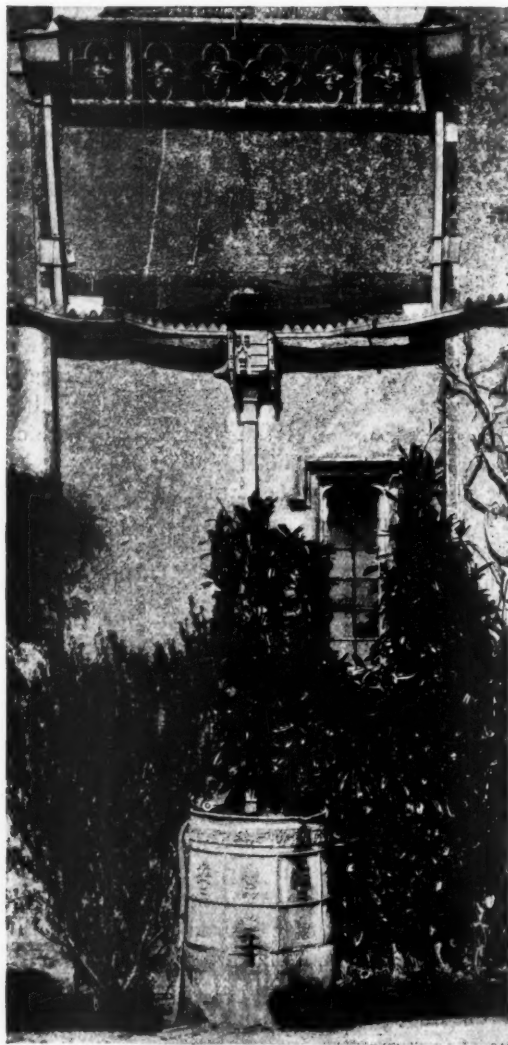


FIG. 20.—POUNDISFORD PARK.

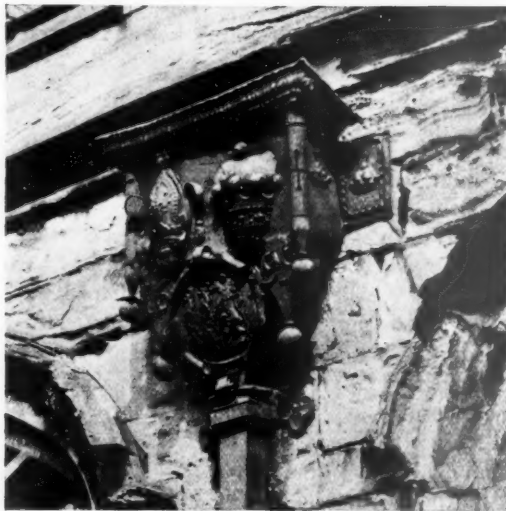


FIG. 21.—DURHAM CASTLE.



FIG. 22.—HADDON HALL.

Very similar to the Durham heads are those of Bolton Hall (Fig. 17), though here the Renaissance rubicon has been finally crossed, and the only suggestion of mediæval parentage which remains is in the pierced fronts of the cylinders. The arms are those of Charles, sixth Marquis of Winchester, afterwards Duke of Bolton, and others of the six heads have the arms of his second wife, Mary Scrope. The modelling of the Paulet hinds which support the shield is especially vigorous. In one head the Paulet coat is supported by the Scrope choughs, a hybrid arrangement due doubtless to the Scrope shield having been lost, and the gap filled by a plumber who was a Gallio in heraldry.

A technical word may be added as to the making of these heads, which applies, more or less, to all heads of the late seventeenth century. The main box part is made of cast sheet lead beaten to the shape and soldered up. The cornice has been cast in lengths, mitred, and soldered on. The dentils and all other ornaments are separate castings soldered on. The substance of lead averages 10 lb. to the foot, but varies between 7 and 12 lb. The method of fixing, viz: simply soldering on from the front instead of also pinning through to the back, is slovenly and unlike the best work at Haddon; hence the dropping off of ornaments and muddled re-fixing. The overlapping acanthus leaves at the bottom of the head are characteristic of the period, and while giving an undeniable richness, do so at the price of troubling the general effect. In 1678 there had ceased to be much reticence in the use of applied decoration. There are no traces of gilding, colour, or bright tinning. The pipe sockets and ears have cable-moulded bands, and are also decorated with the heraldic devices. The pipes used with the flat heads are rectangular ($5\frac{1}{4}$ inches by $3\frac{1}{2}$ inches), and with the angle heads are circular ($4\frac{1}{2}$ inches).

On the Judge's Lodgings at Winchester is a head dated 1687 (Fig. 25). It is interesting that the shield, which was probably painted with a coat of arms, is fixed to the head only at the top and the bottom, and stands quite clear between.

I referred in my last article to some of the Haddon Hall heads. They are numerous, and are of all dates, from about 1580 to 1696, thus presenting a picture of the development of design and craftsmanship which we get in no other house. Some heads in the Upper Court, with rich arabesque masks and balusters at the corners, mark a break from the older manner, though even on them a slight projecting embattled cresting is retained for the delightful spots of shadow which it throws on the top edge (Fig. 16).

There are also a number of heads of very simple treatment (Fig. 22), which are most difficult

to date. I think, however, we are safe in ascribing them to about 1670. There is in the Guildhall Museum the front only of a head, dated 1676, the top of which is nicked and bent over in exactly the same way. It would be hard to devise a head of such perfect simplicity which yet should be so entirely successful.

At South Kensington Museum are five heads from the Old Manor House of Bucklebury, Berkshire, long since destroyed. They are of two main types—one rather pretentiously architectural, the other of the funnel shape, which in its simpler and undecorated form is so common on late eighteenth-century buildings. The latter (Fig. 23) is redeemed from banality by the two antler-like ornaments and the (by me at least) undecipherable monogram. It is altogether a rather slovenly piece of work, and seems to be an amateurish copy made in 1705 of a head of the same shape, dated 1694, which has ornaments of great simplicity and distinction.

The larger head (Fig. 24) is an excellent example of 1690; the twisted edging is not only rich, but its softness seems peculiarly suitable to the material. The pilasters are unusually treated. They are fluted, with Ionic capitals, and have a dado of chequers, which lighten the design with a pleasant spottiness. The three connections between the bowl and the funnel are also rare; they give the general effect of trusses, but are only thin straps. The lettering is admirable, and stands for Sir Henry Winchcombe and Elizabeth, one of his two wives of this name.

Fig. 29 (below) shows what is perhaps the most rococo of English heads. It is from Canons Ashby. The rich sweeping curve of the curled ears is its most interesting feature, and one that deserves repetition in a less exuberant key.

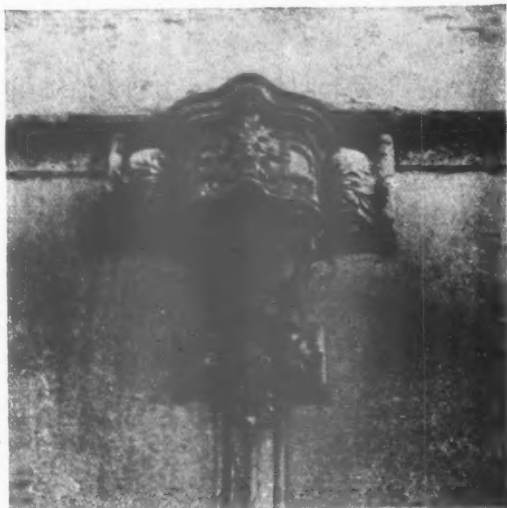


FIG. 29.—CANONS ASHBY.



FIG. 23.—BUCKLEBURY (S.K.M.).



FIG. 24.—BUCKLEBURY (S.K.M.).



FIG. 25.—WINCHESTER.



FIG. 26.—SHREWSBURY.



FIG. 27.—NOTTINGHAM.



FIG. 28.—ABERDEEN.

Fig. 26 brings us to another sort of thing altogether. In the eighteenth century local schools of plumbing seem to have taken shape, and to have influenced the craft of a large district. Shrewsbury affords a notable instance of this. There is a number of heads of this type, with simple cornices and very elaborate monograms, and many bear the municipal leopard's mask. While they show great technical capacity, and give a note of gaiety to the bald brick and stucco elevations, they are frankly of a type which needs no repetition now. Two heads in The Square of 1731 are more loaded with coarse ornament than the example here figured, which was fixed in 1716 on a now demolished building, and is at present in use at the constabulary offices. Shrewsbury pipe sockets sometimes take the form of Corinthian capitals, a superfluity of architectural naughtiness which is not unamusing.

Another local school is that of Nottingham, though here there is more variety. The very late example of Fig. 27 is of a happy simplicity, if somewhat amorphous.

My last example of local peculiarities I take from Aberdeen. It is in the possession of Mr. William Kelly, to whose acute and sympathetic observation I am indebted for much

valuable information anent the Aberdeen leadwork. Fig. 28 shows one of a type that occurs all over the town, though some are even more elaborate. The three large leaves, with modelled faces and serrated edges, are full of vigour, and the cast open-work valance, composed of a rose separated from the thistles on either side by fleur-de-lys, is a striking feature. These ornaments are, of course, inverted. The top mouldings are perhaps rather too heavy, but the whole composition is eminently successful. As the date is probably about 1750, this head contrasts pleasantly with the far less spirited work of like date in England. The Aberdeen heads repay study the more, in that Scotland generally is rather weak in leadwork.

As for pipe-heads in Ireland, I confess to an abysmal ignorance. I fancy that their place is in the chapter which the snakes occupy in the traditional history, but this may be "another injustice."

LAWRENCE WEAVER, F.S.A.

I have to make grateful acknowledgments for permission to reproduce photographs to the Lord Bolton, F.S.A. (Fig. 17), Captain Charles Lindsay (Figs. 16 and 22), G. Harry Wallis, Esq., F.S.A., Director of the City Museum, Nottingham (Fig. 27), and to Leonard Stokes, Esq. (Fig. 29).

The Researches of Mr. W. H. Goodyear.

FROM the time of the revival of Classic Art in the sixteenth century, known as the Renaissance, architects and antiquarians have made careful and elaborate studies of the finest ancient Greek buildings, and more especially the Parthenon. Until the first quarter of the nineteenth century this last-named building and others were always assumed to be built upon perfectly rectilinear lines. In the year 1837 Mr. John Pennethorne, and about the same time two Germans, Messrs. Hofer and Schaubert, discovered that the apparently vertical and horizontal lines of the Parthenon were not in reality truly perpendicular or horizontal, but were made up of a series of delicate leans and curves, quite unapparent to the eye of the ordinary, or indeed even to that of the trained observer. So delicate are these leans and curves that they were only distinguishable by means of a careful and systematic use of the measuring rod and plumbing line. Even then, without some clue to their presence, they were apt to be overlooked, for as far back as the year 1756, Stuart and Revett had measured, and, it may be presumed, carefully, the whole of the Parthenon; and, in the early years of the nineteenth century, Lord Elgin had erected scaffolds

upon the same building without discovering their existence.

Pennethorne himself had paid two visits to Athens without being aware of any such refinements, and it was only the discovery of identical curves in the Theban temple of Medinet Habou, and a passage hitherto overlooked in Vitruvius, which calls attention to these very curves in the Greek buildings, that set him on the track of those in the Parthenon.

For this purpose he paid another visit to Italy, and was confirmed in his opinion that such leans and curves did exist in the ancient Greek buildings. Meeting with lack of encouragement from his architectural and antiquarian brethren, he did not make generally known the result of his researches until many years afterwards.

In the meantime, in 1851, Mr. Francis Cranmer Penrose acquainted the architectural world with the fact that the supposed vertical and horizontal lines of the Parthenon were neither true verticals nor horizontals, but were in reality composed of delicate leans and curves.

Such is, in brief, the history of the now well-known Greek curves, and the other architectural refinements which are to be found in the ancient

Greek buildings, the discovery of which has gone far to revolutionise the study and practice of classic architecture.

Up till the present time the practice of these aids to architectural beauty has been thought to have died with the builders of ancient Greece.

To Mr. William Henry Goodyear, Curator of the Institute of Fine Arts, Brooklyn, U.S.A., belongs the honour of demonstrating that the builders of ancient Rome, and of Byzantium, those of mediæval times, and even of the early Renaissance, actually employed similar devices in many of their finest buildings.

Mr. Goodyear first discovered that the mediæval builders employed such refinements at Pisa in the year 1870, and from that date had made a series of systematic and careful surveys of a large number of Italian and other churches, the result being that he has arrived at the conclusion that what have hitherto been regarded as irregularities, the result of careless workmanship, sinking of foundations, etc., are, in many cases, a survival of the old Greek leans and curves, transmitted down from Greece through generations of workmen.

Besides the more apparent refinements, which up till now have been observed, but not appreciated, Mr. Goodyear has discovered others which are quite as subtle, and analogous to those existing in the Parthenon and other Greek buildings.

Mr. Goodyear, upon his visit to Pisa in 1870, was struck by the sloping of the lines of the cathedral, which seemed to him to be capable of some explanation, and arrived at the conclusion that such could not have been the result of accident, but must have been built so with intention. He was lucky enough one day to come across the little eleventh or twelfth-century church of Santo Stephano, which gave him the key to the mystery of the sloping lines of the cathedral. The interior of the building is built upon a rule of sham perspective, which Mr. Goodyear notes is well known to every nineteenth-century scenic artist. An examination of this interior shows that the pier spacings diminish in size towards the choir, the arches drop in the same direction, the capitals and piers descend in like manner, and, finally, the pavement slopes upwards from the west end.

The whole result of these tricks, or as they should more rightly be termed "refinements," is to give to the spectator who may view the building from the west end, the impression that he is in a very much larger edifice than is actually the case.

From a thorough examination of these aids to the perspective value in Santo Stephano, Mr. Goodyear came to the conclusion that the sloping string courses of the cathedral were intended to

have a lengthening effect upon the building, when seen by the spectators from a particular point of view, a result which he afterwards proved to be the case. Upon a further study of the interior of the cathedral, it was found that there are many refinements present, similar to those in Santo Stephano, and which up till now have been either overlooked or set down to one of the causes cited earlier in this paper, by the generations of architects who have visited the building.

The discovery of the presence of such refinements at Pisa led Mr. Goodyear to a systematic and thorough examination of nearly every important church in Italy, and of others in Northern France, the result being the discovery that the refinements discovered at Pisa are not confined to buildings in that town, but are present in many of the mediæval churches which were examined.

Amongst the more important buildings which the survey party at work for the last ten years under the auspices of the Brooklyn Institute of Fine Arts has visited, and in which have been found the presence of such refinements, are the following: The cathedrals at Pisa, Siena, Fiesole, Troja, Genoa, Prato, St. Mark's, Venice; the churches of San Pietro Somaldi, Lucca; San Stephano, Bologna; Santa Maria Bianca, Lucca; S. Frediano, Pisa; S. Giorgio in Velabro, Rome; S. Maria Ara Coeli, Rome; S. Saba, Rome; besides the cathedrals and churches of Northern France, St. Loup, Chalons; St. Alpin, Chalons; Notre Dame, Chalons; St. Remi, Rheims; St. Jean, Caen; Notre Dame, Paris; St. Ouen, Rouen; and the cathedrals at Amiens and Laon, together with many others.

Two conclusions which Mr. Goodyear has arrived at, after some thirty-five years spent in searching for cases of architectural refinement, are that the mediæval builders were very much adverse to mathematical symmetry, the eye being much better pleased by what is not too obvious, and that in other cases the refinements are present in a building to increase or correct its perspective value.

The refinements which Mr. Goodyear has proved to exist in many buildings are to be found in the following list, which is taken from an article by him on the subject published in an American magazine,¹ and I cannot do better than quote his actual words, which may more accurately convey to the reader the results of his investigations, than were I to paraphrase them:—

(a) "The construction of the piers and vaulting of many mediæval churches in a delicate curve, sometimes leaning into the nave, sometimes bending back from the nave, and in either case making

¹ "Optical Refinements in Mediæval Architecture" (*Architectural Record*, vol. vi. July-September, 1896; No. I. pp. 1-16).



SANTA MARIA DELLA PIEVE, ARRAGO.

The widening of the piers at the transept is about 28 inches.

(By permission of Mr. Desmond, The Museum of Arts and Sciences, Brooklyn, U.S.A.)

a delicate transition return curve to the arch of the vaulting."

Examples of such a refinement are to be found in the cathedral at Pisa and the cathedral at Vicenza. So subtle is this particular refinement, and so easily does it escape the eye, even when one is aware of its existence, that no writer has mentioned it before Mr. Goodyear made his investigations. Architects when they have noticed it have attributed it to the "thrust" of the vaulting of the aisles against the piers supporting the nave arches. In opposition to any such theory Mr. Goodyear mentions cases of such bends occurring where such a thing as thrust is impossible; for instance, at the cathedral at Vicenza the refinement is present, where there are no side aisles. In another case the curve was found upon piers built against chapel walls 20 feet in thickness.

(b) "A refinement analogous to the last (a), and probably the original and earlier form of it. *It is nothing more or less than the survival of the classic entasis in the Middle Ages, and is found in the engaged half-columns which occasionally face the Romanesque pier.*"

Good examples of this are to be found in the cathedral at Fiesole and in the church of San Miano at Florence.

(c) "A refinement possibly or probably derived from (a) and frequently connected with it; a leaning outward and away from the nave of the nave piers, in phases grading from an exaggeration of the backward bend and continuing the curve, to others in which the leaning backward or spread of the piers is in a straight line and not in a curve." Like other refinements this feature has been put down, erroneously, to the thrust of the arch or vaulting, but there is an example at Trani, where such a lean occurs "against the lines of transept walls" 30 or 40 feet in depth.

Examples are present in the church of San Francesco at Pavia, St. Mark's, Venice, and in numerous others.

(d) "A system of bends in vertical lines in the exteriors of façades and choirs, differing from some of the interior pier bends in the fact that the lower part of the bend is *always* a forward lean towards the eye facing the wall, and never, as often in the case of the interior piers, a backward lean beginning at the base (as regards the eye of the spectator in the nave facing the pier)."

Such a lean occurs in the façade of the cathedral at Pisa, which Mr. Goodyear mentions Ruskin has, erroneously, put down as being due to settlement.

(e) "Occasional leans in circular buildings or towers which are not due to accident, and tending to raise a question as to others in which the evidence for accident is not clear, but simply presumptive, and based on the supposed improbability that any building made by common-sense mortals should be unlike those made by nineteenth-century common-sense mortals."

Examples of leans in towers which are due to deliberate intention, and not to accident, are the Baptistery at Pisa, the Bargello Tower at Florence, and the Torre del Publico at Ravenna.

(f) "Curves in plan of horizontal cornice lines." Many examples of this particular feature show the same delicacy of refinement of the old Greek curves, and Mr. Goodyear is positive that this is a distinct survival of such. A good example occurs in the cloisters of the church of the Celestines at Bologna.

(g) "Curves in plan in the alignment of columns and in clerestory walls." This feature is found to have degenerated in the later Middle Ages to mere bends, which have been attributed "to careless building when considered in isolated cases only."

Good examples of such curves are to be found at Fiesole, Trani, and Genoa, and other places.

(h) "Curves in elevation."

Such curves, when regular, cannot be attributed to thrust or careless building; for, as Mr. Goodyear argues, "There can be no suggestion of carelessness for an exact and regular curve in elevation. There can be no suggestion of accident for curves which are invariably curves convex to the sky-line. If accidental, why are not some curves concave to the skyline?" A good example is to be found in the north aisle of Pisa Cathedral, in the alignment of the plinths which support the columns.

(i) "A refinement which consists in increasing the size of the arches near the main entrance of the church and diminishing either space or height, or both, in the direction towards the choir, thereby giving the building an effect of greater dimension."

The spectator upon viewing the church from the west end, naturally takes the size of the bay nearest at hand as the size for all the others. Over thirty different churches, examined by Mr. Goodyear, show the presence of such a refinement, a good example occurring in the cathedral at Fiesole.

(j) "A refinement analogous to the last but applied to the second of the two transverse arches which span the nave of a church at the junction with the transept."

By dropping this second arch below the level of the first a false perspective is obtained, and the church looks larger than it really is. One

of the most marked instances of this refinement occurs in the cathedral at Siena, where the second arch is no less than five feet below the level of the first. Other churches in which this refinement is present are the cathedrals at Piacenza, Pisa, and the church of Santa Maria Novella at Florence.

(k) "A refinement which consists in a pavement sloping upward toward the choir, nearly always with arches and capitals brought down to the horizontal level, and sometimes with capitals and arches brought down below the horizontal level. The effect in either case is one of perspective illusion;" the object being to increase the apparent size of the building.

No less than eighty of the Italian churches which Mr. Goodyear examined show the presence of such a refinement, among which may be quoted the churches of Santa Maria Ara Coeli, Rome, the Cappella Palatina, Palermo, and the cathedrals at Siena and Orvieto.

(l) "A refinement which consists in converging the walls of the church or the piers and walls of the nave in the direction of the choir." Only five churches, amongst those examined in Italy, exhibit this feature, the most prominent instance being that of San Stefano at Venice. Poitiers Cathedral is a French example.

(m) "A refinement which consists in building the church with an oblique or twisted plan, so regulated as to mystify the eye as to the proportions of the building and without revealing itself as an obtrusive fact."

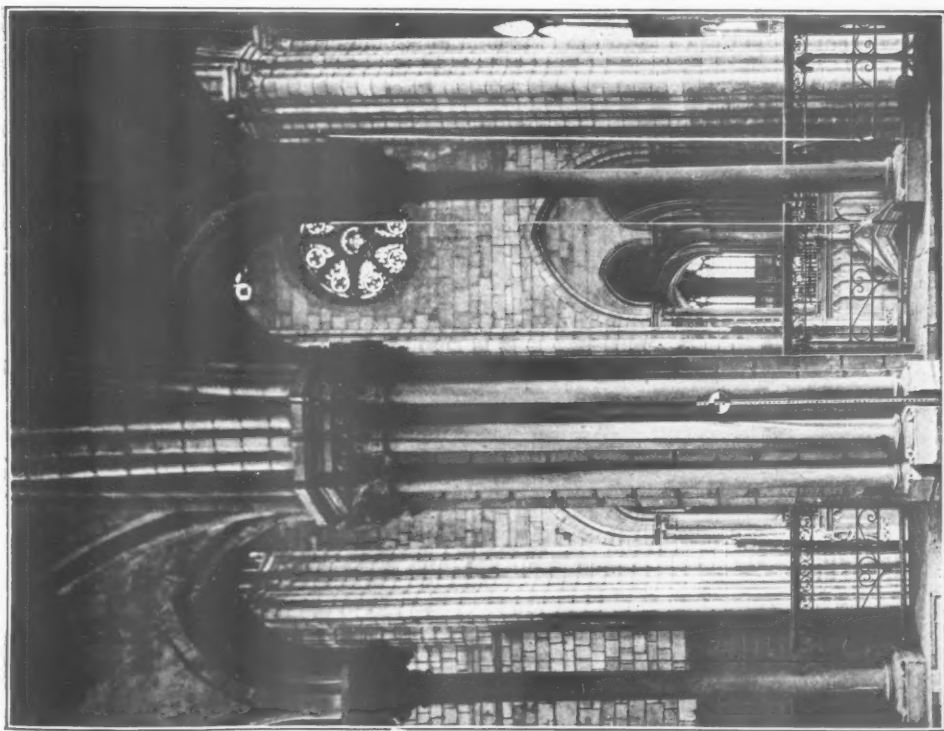
Mr. Goodyear discounts the well-known explanation of the deflected choir, which is generally regarded as being symbolical of the bending of our Lord's head upon the cross. He puts such a theory down merely to mediæval or modern invention, as there is no evidence to support this fact. For instance, there are cases of this deflection occurring in churches without transepts, and which are therefore not in the shape of the Cross, and others where the whole plan of the church is twisted.

Examples of churches in which the choir alone is deflected are too well known to require mention, but churches in which the whole plans are off the straight are to be found at Arezzo, Bari, Toscanella, and other places.

(n) "There are many phenomena which are most easily classed under the general heading of 'symmetrophobia,' or dislike of mathematical symmetry."

Such a designation includes many of the facts given in the above list and others, such as the bent column at Arezzo.

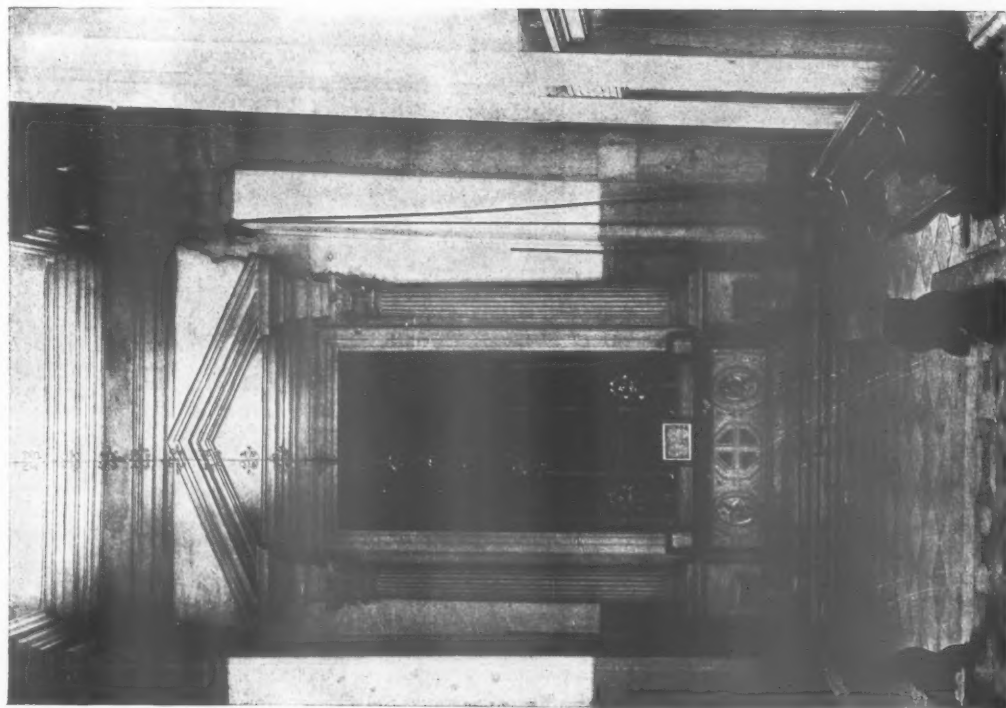
The refinements given in the foregoing list have been, for the most part, discovered by Mr. Goodyear, but some, as has been stated before, have



NOTRE DAME, PARIS.

LEFT TRANSEPT GALLERY, LOOKING TOWARDS CHOIR.

(By permission of Mr. Desmond, The Museum of Arts and Sciences, Brooklyn, U.S.A.)



S. GIORGIO MAGGIORE, VENICE.

VIEW LOOKING ACROSS THE FACADE WALL TOWARDS THE RIGHT AISLE.

(By permission of Mr. Desmond, The Museum of Arts and Sciences, Brooklyn, U.S.A.)

been known to architects for some time, though put down as irregularities due to various causes, such as bad building. Examples of the more apparent refinements are not wanting in the cathedrals and smaller ecclesiastical buildings of Great Britain. The irregular spacing of the bays of the nave, in Ely Cathedral, is an example of the refinement mentioned under the heading (i), whilst the choir is deflected from the main line of the church.

St. Giles, Edinburgh, shows similar refinements, and the leaning outwards of the west end of Paisley Abbey, and the sweep of the side walls of Kirkwall Cathedral, are other instances. A more thorough investigation of these and other buildings may disclose the presence of features hitherto unsuspected.

Mr. Goodyear does not dogmatise. He merely lays before the public a store of interesting and curious information, and backs up his theories with some very sound arguments. He is quite willing to revise any opinions he may have formulated in view of any fresh light which may be thrown upon the subject.

Part of the large collection of photographic enlargements and surveys which Mr. Goodyear has got together in the course of his studies, has been on show at Rome, where it has aroused considerable interest.

The greater part of the collection is, however, housed in the Institute of Fine Arts at Brooklyn. The Edinburgh Architectural Association has taken the opportunity of the Rome exhibit being so near this country to obtain it, together with the larger portion from Brooklyn, and intends holding an exhibition of the same in the National Portrait Gallery, Queen Street, Edinburgh, from the beginning of September to the middle of November of this year.²

Great thanks are due to the Directors of the Brooklyn Institute of Fine Arts and to Mr. Goodyear, who have placed every facility in the way of the Edinburgh Association by giving every help in the matter of sending over the drawings and surveys to this country.

During the progress of the Exhibition it is intended to hold a conference of architects and others to meet Mr. Goodyear, who has promised to pay a visit to Edinburgh early in September. Such a conference should not fail to throw some fresh light upon the study of a subject which may be said to be only at present in its infancy. Besides numerous surveys which have been specially lent by Mr. Goodyear, he has written a new catalogue for the Exhibition, which is to be very fully illustrated with reproductions of many of the photographs and drawings on view.

L. INGLEBY WOOD.

² It was originally intended, as announced, to open the Exhibition in the middle of August, but this has been found impossible owing to the difficulty in getting the photographs and drawings delivered in this country in time.

EDITORIAL NOTE.—Mr. Edward S. Prior will review for this magazine the exhibition of Mr. Goodyear's collection at Edinburgh.

Cheap Cottages and the Exhibition at Letchworth.—I.

THE exhibition of "cheap" cottages which is now being held at Letchworth, the first Garden City, affords an opportunity of reviewing the subject of cheap cottages generally. The numerous cottages of all forms and sizes there on view constitute a text for a general discussion.

The exhibition was organised by the *County Gentleman* in response to a suggestion made by Mr. J. St. Loe Strachey, the editor of the *Spectator* and proprietor of the former journal. The Garden City Company offered a site on which cottages might be erected where by-laws were not too stringent. Donations were solicited from the public, and an influential list of patrons was formed. The stated primary object of the exhibition has been "to secure the erection of the best £150 cottage" (we quote from the exhibitors'

application form and the official catalogue), and a first prize of £100 was offered in this competition. The conditions were that cottages entered for this prize should be detached, and provide, as far as possible, accommodation as follows: either one large living room and scullery or one small room and a kitchen scullery; three bedrooms, with two fireplaces, containing a total cubic space of not less than 2,000 ft.; height of rooms not to be less than 7 ft. 6 in. Further prizes were offered for the best pair of five-roomed cottages costing not more than £300 the pair; for groups of three or four cottages, no cottage containing more than six rooms, including scullery, and not to cost more than £35 per room; and for a detached cottage, or pair of cottages, each containing not more than six rooms, including scul-

lery, erected at a cost of not more than £35 per room. In addition there are prizes for designs and specifications to similar requirements to the above four classes, and for a cottage built of cement concrete, a wooden cottage, a model of a small holding, improvements in building materials and fittings, etc.

The setting of the limit of £150 as the cost of a cottage was due to Mr. Strachey's article, "In Search of a £150 Cottage," in which he calculated that an agricultural labourer whose wages averaged between 14s. and 16s. a week could not afford to pay more than 3s. a week, or £8 a year, for rent; and that, therefore, a cottage must not cost more than £150, as the interest on that sum at 4 per cent. would amount to £6, and rates, annual repairs, sinking fund, and insurance, would account for the other £2. He did not count anything for the site or water supply, which, he thought, the landowners on many estates would be willing not to take into consideration in the rent.

It is clear from the above that the cottages were intended to be suitable for agricultural labourers and to cost, exclusive of site and water supply, £150. In the preliminary application form for exhibitors (before referred to) among other data to be filled in by competitors was a statement of the actual cost, to this being appended a note to the effect that the cost of carriage of materials to Garden City Estate was not to be included, the object being to ascertain the nett cost of erection in each locality. Again, we find a note in the official catalogue to the effect that "the estimated cost of erection in each case is to be exclusive of architect's fee and builder's profit." Most of the competitors state the cost of their erections at the specified sum of £150 exclusive of these necessary items. Whether they will be held to have conformed to the conditions I cannot say, but they have certainly not provided £150 cottages; and, if we accept Mr. Strachey's statement of the problem, fail to solve it. Some cottages, too, evidently cost more than £150 even after the recognised deductions are made, and their designers will find it difficult to reconcile their statements with the truth; with others the figures given are plainly unreliable, because the catalogue was published before the erection of their cottages had been finished, or in some cases even begun, and everyone who has had experience of building knows how easily estimated costs (especially when made on the "hope, faith, and belief" principle) are exceeded. It has been plain that a good deal of the agitation for and interest taken in the subject of cheap cottages of late has sprung from persons other than the agricultural labourer or artisan—

persons who have been caught with the "week-end" fever, and while seeking for a cheap cottage, are prepared to spend a good deal more on it than £150. Visits to the exhibition have shown its attraction to these people; and those competitors who have used the exhibition to advertise their abilities in the way of pretty design, "l'art nouveau" or "arty and crafty" furniture, and patent fittings—far too expensive for the agricultural labourer—have been wise in their generation. It is doubtful, however, if the methods of some few designers who have hung the walls of their cottages with designs for houses of large size, buildings of other kinds, unsuccessful competition drawings, or filled the rooms with specially designed furniture, etc., are consistent with professional dignity.

We may now consider what the problem of housing the agricultural labourer is, and the means of solving it. It has been determined by the inquiry of Royal Commissions and statistics gathered by the Census Commissioners, that there has been a dearth of cottages in the country resulting in overcrowding, growing worse year by year throughout the last century, and that this has been one of the chief causes of the steady decrease in rural population, and the increase in towns, with all the attendant difficulties and dangers.

In former times the erection of cottages seems to have been looked upon as a necessary part of the equipment of an estate; but now, through the depression in agriculture, and the altered conditions of trade in this country, the landowner seeks an immediate financial return from the money he expends on houses, or depends on outside speculators to provide accommodation for his workers. The practical failure of the last-named means of supply makes it incumbent on landowners to provide housing accommodation, while the depression in agriculture has resulted in much land going out of cultivation and depreciating in value. It must be accepted, therefore, that the current rates of wages to agricultural labourers will not bear increase under the present conditions. The artisan classes in towns have, of course, sought and obtained increased wages and more luxurious living, and the problems of the poor, and overcrowding, have become most pressing.

While statesmen are endeavouring to find a remedy for this state of affairs by a change of our fiscal system, the limitation of municipal socialism, and the creation of garden cities, landowners are seeking a palliative in the cheapening of building, the cost of which has been steadily increasing owing to a general rise in wages in the building trades. With the latter aspect we are here particularly concerned.

It will be seen above that Mr. Strachey puts the agricultural labourer's wage at 14s. to 16s. a week; but Mr. Wilson Fox, of the Board of Trade, in the official report on the earnings of agricultural labourers in the United Kingdom in 1905, although he gives the lowest average weekly earnings in England as 14s. 6d. in Oxfordshire, and the average earnings in Norfolk as 15s. 3d., Gloucestershire as 15s. 5d., and Suffolk and Dorsetshire as 15s. 6d., states that the average cash wages are 11s. 11d. in Dorsetshire, 12s. in Oxfordshire, 12s. 4d. in Norfolk, 12s. 11d. in Gloucestershire, and 12s. 9d. in Suffolk, while in some districts of Dorsetshire they were as low as 10s. Many cottages in the country are let at 1s. 6d. a week, and the provision of a house for this rental is, in my opinion, what should be striven for if the needs of the poorest paid are to be met. A £150 cottage may be all very well for the higher-paid labourer, but a £100 cottage is the ideal for the poorest. 1s. 6d. a week amounts to £3 18s. a year, and this would allow 3 per cent. interest, with a remainder for repairs, etc.

Bylaws have undoubtedly been too stringent for rural districts, but they have not been in force everywhere, and the Local Government Board's code has recently undergone modification, and, though still extravagant, is now less burdensome. Measures are being taken, however, that it is hoped will remove unnecessary restrictions.

To build a cottage cheaply attention has to be paid to economy in five directions: (1) Planning; (2) Materials; (3) Fittings; (4) Cartage; (5) Employment of Labour. It is proposed to treat them in this order.

Planning.—In planning a cottage for an agricultural labourer, it is necessary to consider the life and requirements of the occupants; and though this may be considered a truism, it is apparent from the many plans that are proposed that designers are too often ignorant on this essential point.

A labourer's cottage must be designed with a view to his children. The family of course require a living room and bedrooms; the number of the latter is the point that requires decision. When the children are babies, say up to the age of three or four years, they may sleep in the same room as their parents. From four to seven years of age boys and girls may be allowed to sleep together, but should be separated from their parents, and from six onwards the sexes ought to occupy separate rooms. At the age of about fourteen years the girls often go out to service, or may stay at home to assist in the fields or cottage industries until they are married at the age of eighteen to twenty years and start housekeeping for themselves. The boys may go out to service,

join the army, or remain at home. However, from the age of fourteen the children may be regarded as wage-earners, and therefore can assist their parents to pay for the larger house needed to give the accommodation that will then be required. The rent is often partially made up by taking a lodger, but we think this will be regarded as undesirable with a house occupied by a young couple. It is evident that single men and women and those past work must find room, but for the single this should be found in cottages where there is a small or no family, such as with parents or relatives, and couples whose children have grown up and departed; and for those past work with their children or relatives. Where an old couple have been frugal and saved up for their old age, or are pensioned by their relatives, they may require a house of two rooms (a living and a bed room).

For bachelors, separate cubicles with common living and mess rooms have been provided in a block, with two other cottages for married couples. These bachelors' quarters were arranged at one end of the block, there being connection between the kitchen of the middle cottage and the bachelors' mess-room, so that the domestic work and cooking could be done by the women of the middle cottage. A block of cottages on this principle was illustrated in *THE ARCHITECTURAL REVIEW* for June 1905.

We will consider a three-roomed cottage and its possibilities of accommodation. Here there are two bedrooms, and in the one an agricultural labourer and his wife sleep, and with them one, two, or perhaps three children may sleep, until they reach the age of three years. This, then, must be a large room. The other bedroom may be given over, for the time being, to the father and mother, or a relative (say a younger brother or sister), but it is soon required for the growing children. When these reach the age of six the boys should be separated from the girls. As three sleeping rooms are required, and there are only two bedrooms, the only alternative is to utilise the living room. This may be regrettable, but with the very poorest it has to be done, and therefore must be reckoned with. It is only common sense for the poor to make use of free space, and a lodger is often taken in with even such small accommodation. It is certainly preferable for persons to sleep in sufficient air space to overcrowding and mixing the sexes in the bedroom, even though the room has been in use during the day. As in the country the occupants spend a greater part of their time in the open air the objection is further weakened. A three-roomed cottage can be held, then, to accommodate the parents and a baby in one bedroom, two girls (and a younger child at a pinch) in the other, and two

boys, say, in the living-room—namely, six children are accounted for, and this is a reasonable allowance for a labourer's family, for after fourteen years the children, as was said before, become wage-earners. A cottage of this size, then, is suitable for the poorest.

We now come to the four-roomed cottage, consisting of a living-room and three bedrooms. It is apparent from the above that this will accommodate six children, and if a family is of exceptional size the living-room might be utilised for a further two.

With a five-roomed house a room can be allowed which might be a bedroom with a large family, or serve as a parlour for the careful, hard-working labourer, who deserves every encouragement to social advancement.

It is evident the hygiene of a cottage requires careful attention. Upon the physique of the country labourer largely depends our national existence, and this must not be suffered to be impaired. The planning and construction must be such that a cottage is healthy and comfortable all the year round—in winter time and rainy weather as well as in summer and fine weather. Some persons are almost hardened enough to live in the open and to brave the most insanitary conditions for a time, but our desire should be not to eliminate the weakly but to nurture them to be strong. Possible illness must also be considered. Sanitary regulations as to water supply, disposal of sewage, waste water, damp and foetid air, and continual inspection by properly appointed medical officers are all necessary, and need not be dealt with to any extent here; but the subject of ventilation and the cubical contents to be afforded is important as affecting the size of rooms. The bylaws have laid down a minimum amount of air space on the recommendation of sanitarians, and this is continually advocated. As this affects the cost so materially, it is wise to consider the question somewhat closely. The arguments for regulating the air space are summarised by Mr. Robert Williams and Mr. Fred Knee in "*The Labourer and his Cottage*,"¹ and they have urged the Local Government Board, on behalf of the Workmen's National Housing Council, to refuse relaxation in this respect. Parkes in his work on hygiene fixed the amount of fresh air that should pass through a given space in an hour in order to maintain the proper degree of purity at 3,000 cu. ft. for each adult healthy male. He quotes Pettenkofer's experiments as to the smallest space which could be efficiently ventilated, placed at 424 cu. ft. by the "best mechanical contrivances and regardless of cost," the air being changed six times per hour. As mechanical means are out

of the question on a score of cost, Parkes considered so-called "natural" means, and thought a change of "five times per hour would be too much, at least in barracks with 600 cu. ft. per head; the rooms are cold and draughty when anything approaching to 3,000 cu. ft. per head per hour is passing through." He thought a change equal to four or three times per hour was all that could be borne under the conditions of warming in this country, and if this were correct from 750 to 1,000 cu. ft. should be the minimum allowance of initial air space. Huxley in his "*Elementary Physiology*" thought at least 800 cu. ft. should be provided. Willoughby, in his "*Hygiene*," advocates the same amount as Parkes. Dr. B. A. Whitelegge, in his "*Hygiene and Public Health*," thinks the air in a room cannot be changed more than about three times per hour without causing an inconvenient amount of draught, and hence, on the basis of 3,000 cu. ft. of air per hour, asks for an air space of 1,000 cu. ft. per person. Suppose we take four times per hour as a basis, this means for two persons a room 10 ft. by 15 ft. by 10 ft. high containing 1,500 cu. ft. Messrs. Williams and Knee ask for 1,200 cu. ft.

Now the assumption all along is that 3,000 cu. ft. of air per hour is required per person, and that there must be no draught. Our knowledge of ventilation has advanced of recent years. Mr. E. G. Rivers, Chief Engineer to H.M. Office of Works, in a paper read at the recent congress of the Royal Institute of Public Health, said that the supply of air per person per minute was placed by some authorities at 30 cu. ft., and stated that personally he was inclined to the opinion that a computation based upon this minimum scale would suffice very well if the air were of good quality. This means we must provide 1,800 cu. ft. of air per hour per person. On Parkes' basis of a change of air four times an hour, we have a space of 450 cu. ft. required per person, or 900 cu. ft. for a double-bedded room.

Everyone seems to be mortally afraid of draughts, but to the labourer and his family living in the pure air of the country and in the open most of the day a certain amount has no terrors, while if the case of a sick or delicate person is raised as an argument, the wearing of the old-fashioned nightcap that has unfortunately gone out of favour need only be resorted to, and a sufficient amount of warm bed-clothing provided. The fact is that it is not the quantity of air passing through a room that makes it draughty, but the restriction of the size of inlets which causes small streams of quickly-moving cold air to enter a room, heated many degrees beyond the temperature of the outside air, and impinge upon persons. We

¹ Published by the Twentieth Century Press, Ltd., 37A, Clerkenwell Green, London. Price 2s. net.

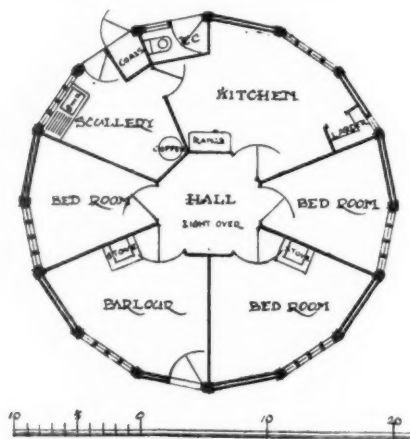
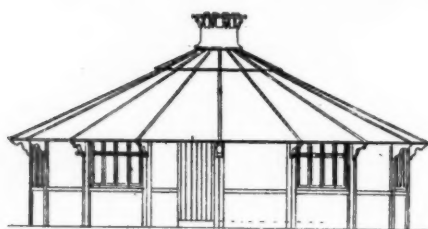


FIG. 1.—REINFORCED CONCRETE COTTAGE.
HESKETH AND STOKES, ARCHITECTS.

put delicate consumptive patients in rooms where one face is open, where large openings exist round the other walls near the floor, and with an opening in the roof, and yet they do not suffer, but improve in health. People suffering from bronchitis and asthma are troubled not by cold air but by changes of temperature. It is not well to over-heat a bedroom, and large ventilation openings would avoid this, avoid draughts, and give a plentiful supply of air. All that is necessary is that persons should be shielded from a stream of colder air; so that we must place the window, the door, the ventilators, and the fireplace in such a position that air does not blow directly across the bed, and no harm will accrue. The working classes often bring all one's consideration to naught by stopping up every air inlet in the endeavour to gain warmth without expenditure on fuel, and become delicate and deteriorate physically. The principles of ventilation should be taught in schools, and persons encouraged to sleep with the windows open.

A designer must needs allow in a bedroom a space of 4 ft. by 6 ft. 6 in. for a full-size bed and space to get round it, say 46 sq. ft., totalling 72 sq. ft. If 8 ft. high the cubical contents will be 576 cu. ft. To give two persons 3,600 cu. ft. of air per hour it would need the air in the room to be changed six and a quarter times per hour. With a room this minimum size it is clear special attention should be paid to air inlets and outlets, and the positions of windows

and doors in relation to the bed. It is desirable that rooms should be larger than this, and I would not advise any bedroom for two persons smaller than 700 cu. ft. The Local Government Board requires 300 cu. ft. of space, and the London County Council 350 cu. ft. per person in common lodging-houses.

In planning a cottage every means of cheapening the cost must be availed of. Floor area and cubical contents have both to be provided, and we have first to consider the most economical shape for obtaining this. It is evident the wall enclosing an area should be as little as possible. This is least with the circle, but the self-evident difficulties entailed in such a plan render it uneconomical of erection, while the rooms are awkwardly shaped for the disposal of furniture. There is one cottage (No. 73) in the exhibition on such a plan, namely, that designed by Messrs. Hesketh and Stokes, and constructed in reinforced concrete by Messrs. Cubitt. It is here illustrated as a matter of curiosity (Fig. 1). The cost is put at £200, so that it offers no solution of the problem in hand. The most convenient shape is a rectangular one, and it is easily to be seen that a square contains the greatest area with the least extent of wall, being superior to an oblong, an L or a T shaped building. The arrangement of rooms in a square plan is easy, and the amount of passage small, whereas though an oblong may be slightly easier in the first respect it is wasteful as to the latter. If however the square is increased until its side exceeds 20 ft. the increase of material rendered necessary to strengthen the roof and floors will then cause the oblong to become the cheaper plan. In such a case a back addition is often most advantageous, as the offices can be placed therein and the construction of walls be inferior.

The next question is as to whether a cottage of the bungalow type, on one floor, is cheaper or dearer than one on two floors. The cost of flooring on the ground- or on the first-floor is practically the same: hence, so far a bungalow is as cheap as a two-floor cottage. But with the former there is twice the amount of roof in the latter, and if the plan is squared up to gain the small saving in wall that would be possible thereby, this would be balanced by the increase of strength required by a greater span. The foundations likewise are doubled, for though the walls are less in height, there can be no reduction as there is greater risk of settlement over the larger ground area covered. It has been argued that the space for stairs and landing is saved, but as the space under and over stairs is utilised to a certain extent this would be small, and is balanced by the increase in passages necessitated

by the larger area, and the extra chimney stack required. The one-floor arrangement costs more than two floors, while it is undoubtedly somewhat healthier to sleep above the ground level. Three floors are not economical, requiring the ground-floor walls to be materially strengthened. Two floors should not be exceeded, an increase of area being cheaper.

A saving in walls may be effected by building in blocks, because of the party walls. In a block of two, about 12 per cent. of wall is saved over one, *i.e.* from £15 to £25 on the two, or £7 10s. to £12 10s. each; in a block of three £10 to £17 each is saved; and in a block of four £11 to £18 each cottage. Beyond four in a block the saving is not very material. Of course the erection of a block of cottages enables the labour, cartage, purchase of materials, and drainage to be dealt with better than with one; but if there are more than six in a block, the fire risk increases (even if the bylaws do not require safeguards that will increase the cost in blocks of such size); and the advantages of three open sides for light and air, and convenience in planning, by allowing an entrance on the side, lead me to advocate blocks of four, in which the two end houses have these advantages.

Breaks, chases, and buttresses in brickwork or stone for effect, should be eschewed in small cottages as they entail unnecessary expenditure of labour and materials.



FIG. 2.—COTTAGE. G. M. CRICKMER, ARCHITECT.

We now come to the means of obtaining cubical contents. A room must have a certain minimum space and height, and if it is desired to increase the cubical contents we may do so by increasing either the area or the height. By the former method floors, roofs, and walls are increased, while in the latter only walls, and the balance remains in favour of the latter. The minimum height allowed under the competitive conditions of this Exhibition was 7 ft. 6 in., and this seems as little

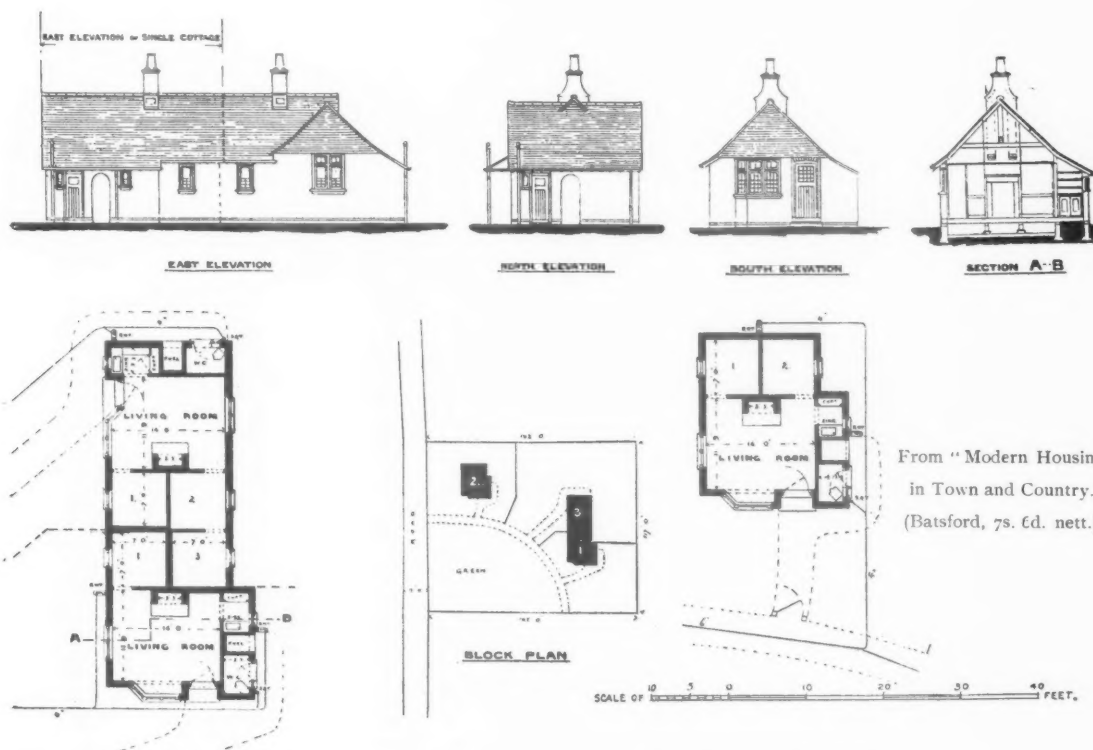
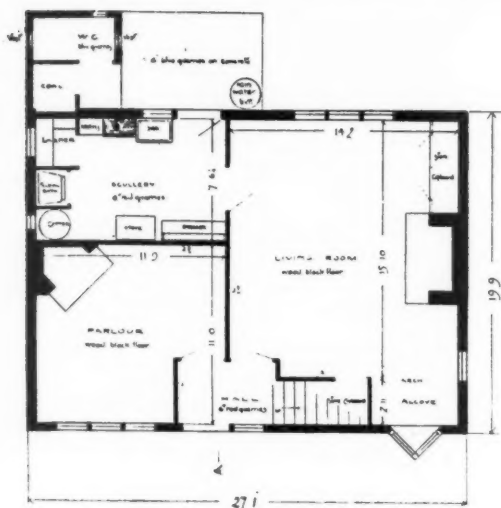
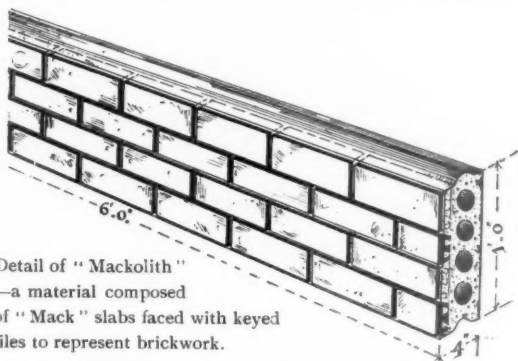


FIG. 3.—PAIR OF COTTAGES AND SINGLE COTTAGE. HENMAN AND COOPER, ARCHITECTS.



excluding wet, and are needlessly expensive. Flat roofs are not so economical as roofs of a low pitch. Tile roofs require boarding or "under-slating" paper under them, and a higher pitch than slates, and therefore are more expensive than those covered with the latter material, unless the carriage is excessive.

The grouping of rooms in a small cottage is generally a matter of dovetailing into the square



Detail of "Mackolith"
—a material composed
of "Mack" slabs faced with keyed
tiles to represent brickwork.

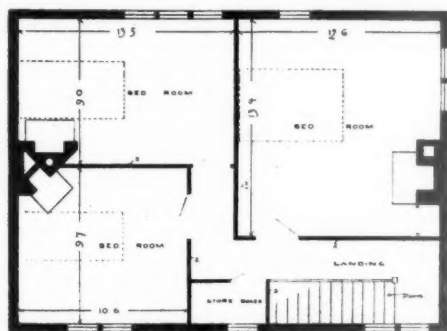


FIG. 4.—DETACHED COTTAGE CONSTRUCTED OF "MACKOLITH" TO FIRST-FLOOR WINDOW SILLS AND
"MACK" PARTITION SLABS ROUGH-CASTED ABOVE, BY J. A. KING & CO. V. DUNKERLEY, ARCHITECT.

as it should be. Of course the lower the height of rooms the less the cost of a building, and the more economical they are of fuel for warming in the winter; but to secure ventilation a certain cubical capacity is necessary, and where the area of a bedroom is as small as the minimum of 72 square feet we placed it at, the height ought to be 8 ft. 6 in. or 9 ft.

The roof, for economy, should be simple, as flat as the materials will allow, not more than 18 ft. span, and of the collar-beam pattern, which will allow rooms to go partially into the roof; if this last is desired a mansard roof is not expensive. Dormers, hips, breaks in the roofs, valleys, large overhangs, steep pitches, may be desired for picturesque effect, but they entail an increase of labour (perhaps of material also), the use of lead, under-boarding, and other means of

or rectangular shape with a minimum of passage-room or landing space. Avoidance of draught; collection of chimneys inside house or on north or other walls exposed to prevalent cold winds, in order to economise warmth; disconnection of w.c.'s or earth-closets, and of the washing-copper, to avoid vitiating the air in living rooms (placing the copper outside so as to prevent steam entering the house is also desirable); aspect, so as to secure sunlight in living rooms during a portion of the day (large windows cost no more than brickwork, and there should be plenty of light always) and exclude it from the larder; and economy of drainage, and water supply, are points to be taken into account. Plans, however, do admit of some classification.

Small cottages may be divided into two divisions: (1) those containing two bedrooms; and (2) those

with three bedrooms. Owing to the conditions of the competition (stated above), there are few examples at Letchworth that belong to the first division.

Fig. 2 is a portion of a plan of a block of four cottages designed by Mr. G. M. Crickmer, the units in which vary in accommodation, the others containing three and four bedrooms. Mr. A. H. Clough, of Burley, Hants, has also erected a cottage (No. 69), which contains similar accommodation to Fig. 1, the plans being almost identical, though by using winders in the staircase Mr. Clough has managed to save space on the landing, and so to improve on Mr. Crickmer's plan. He states the cost of erection at £100 to £110, but as Mr. Crickmer gives the cost inclusive for the block, we cannot ascertain the cost of each cottage.

Messrs. Henman and Cooper (Fig. 3) have erected a pair of cottages and a single one, which come within this division. These are, however, of the bungalow or one-floor type, and the cost is stated to average £100 per cottage, but the walls are here one brick thick, and the bedrooms are simply recesses, so their design is by no means so good as the others we have referred to. The idea of allowing a bed-recess is worthy of consideration, because in no other plan has any arrangement been made to provide for the living room being used for sleeping purposes under conditions such as have been previously referred to. I suggest that an alcove under the stairs, with an arrangement of folding doors, might be adopted so as to allow a bed to be shielded off from the living room by a curtain; these doors could be folded back for making the bed, or if the space were not required for sleeping purposes. In the exhibition of designs there is an interesting plan for a cottage with two bedrooms, erected at Peaslake, Surrey, designed by Messrs. Nicholson and Corlette, which is rather superior to Mr. Clough's or Mr. Crickmer's designs, in so far that entrance is obtained from the side into a lobby, from which the stairs rise in front,

(To be concluded.)

while a door on the one hand leads into the kitchen, and one on the other into the scullery. On the opposite side there is an open porch, with the coals on the scullery side, and an earth closet on the other side; thus these two necessary adjuncts are reached under cover from the back door to the kitchen. The bedrooms upstairs extending over the offices are consequently larger than in the two other plans referred to. It may be mentioned here that all the other drawings on exhibition are unimportant to our consideration of the problem, as they are more or less duplicated in the cottages built, or else are extravagant freaks.

Another type of cottage has been erected in Ireland with just a kitchen, pantry, and bedroom on the ground floor, and two bedrooms and a child's bedroom on the upper floor. This affords another possible variant in the way of accommodation.

The offices in a small cottage of the two-bedroom type deserve some attention. It is no doubt better to have the scullery separate from the living-room, but it is not absolutely necessary, and some designers propose a kitchen-scullery, though they then generally provide a living-room for meals, etc. A bath—which ought to be a necessity—adds to the cost, and very often becomes a receptacle for tools or filth, and takes up valuable space. It may be considered better to leave the family to provide their own zinc bath or washing tub. A larder should be provided and removed from the sink and w.c., be ventilated with a window to the open air, and face the north if possible, or, if not, the west, and be shaded from the sun. Cupboards are always useful. It is certainly inadvisable to allow a possibility of the earth-closet or water-closet contaminating the air in the house; but a covered way is desirable both to this and the coals (sufficient space should be given for wood that may be gathered on the estate, the coal, and tools and odds and ends), and if this is provided the washing-copper can be placed here so that the steam does not enter the house.

H. KEMPTON DYSON.

Competitions.

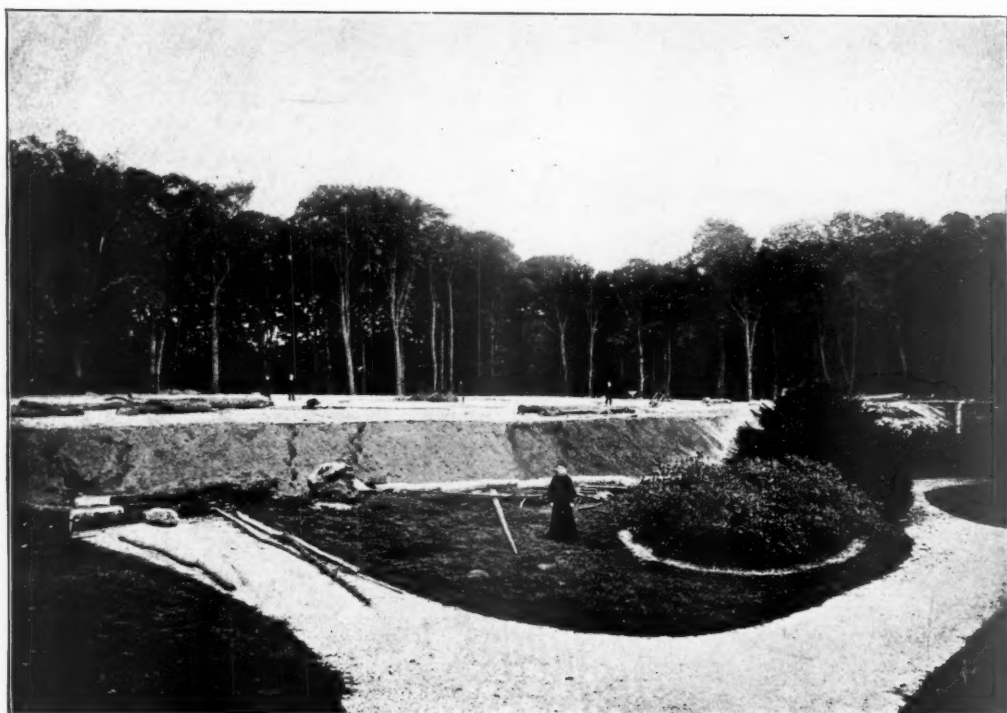
THE PEACE PALACE AT THE HAGUE.
PROGRAMME OF THE COMPETITION FOR THE ARCHITECTURAL PLAN OF THE PEACE PALACE FOR THE USE OF THE PERMANENT COURT OF ARBITRATION, WITH A LIBRARY. PUBLISHED BY THE BOARD OF DIRECTORS OF THE CARNEGIE FOUNDATION. COST, 1,600,000 GUILDERS.

ARTICLE 1.—The competition is open to architects of all nations. The Board of Directors of the

Carnegie Foundation, however, intends to invite specially some of them to compete.

ARTICLE 2.—Competitors have to take care that within seven months after the date of issue of the present programme, as expressed thereon, the following will be in the possession of the Board of Directors of the Carnegie Foundation at the Hague:—

- (a) a plan showing the situation of the building with its surroundings, scale 1 : 500;



SITE OF THE PROPOSED PALACE OF PEACE AT THE HAGUE. FROM POINT B.

- (b) the ground plans of the different floors, scale 1 : 200;
- (c) the drawings of the four façades, scale 1 : 100;
- (d) two vertical sections showing: the main staircase, both the large and the small Court of Justice, and the Library (that part of the building where the books are stored), scale 1 : 100;
- (e) the middle portion (*travée*) of the front façade with section, scale 1 : 50;
- (f) a portion (*travée*) of the interior of the large Court of Justice, scale 1 : 50;
- (g) a drawing of the main staircase, scale 1 : 50;
- (h) a drawing giving a perspective view of the building and its surroundings.

The view is to be taken from the point marked O in the plan of the site which is here reproduced. This view shall be drawn on a sheet of paper, long 0.80 M., high 0.60 M. These drawings must clearly show the arrangement of the building in all its details.

The designation of the rooms must be clearly written on the ground plans in the French language; reference to an indicating list is not allowed.

The drawing of the front façade and the perspective view must be executed in colour; all the other drawings in black line.

No plastering is allowed on the façades.

ARTICLE 3.—Together with the plans a short explanatory notice, quite legibly written in the French language, must be sent in, and, in order to render possible correspondence with the author of the plan without knowing his name, a closed and sealed letter

mentioning his name, and bearing on the outside an address and a motto, which motto shall also figure on the drawings, on the explanatory notice, and the package.

ARTICLE 4.—The packages, containing the above-named plans and papers, that have not arrived at The Hague within seven months after the issue of this programme, will not be opened, and remain at the disposal of the sender.

ARTICLE 5.—If the author of any plan should fail to comply with one or more of the provisions of this present programme, his plan shall be excluded from the competition.

ARTICLE 6.—The letters containing the names of competitors to whom a prize has been awarded will be opened by the Jury.

ARTICLE 7.—The Jury is composed of:—

The Chairman of the Board of Directors of the Carnegie Foundation, and

MR. TH. E. COLLCUTT, *London*.

DR. P. I. H. CUYPERS, *Roermond*.

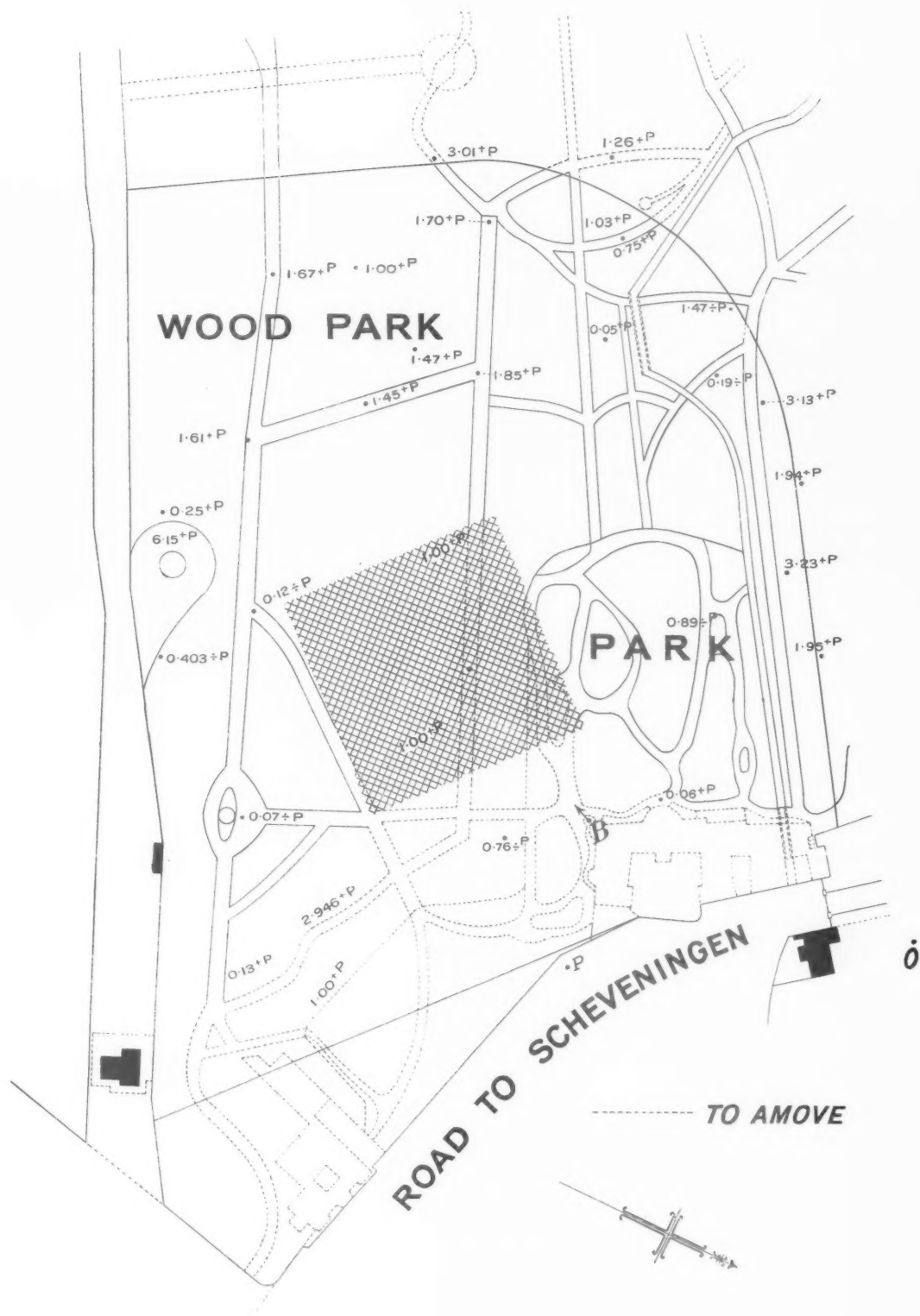
GEH. OBER-HOF-BAURAT IHNE, *Berlin*.

PROFESSOR K. KÖNIG, *Vienna*.

MR. NÉNOT, Member of the Institut de France, *Paris*.

PROFESSOR W. R. WARE, *Milton, Massachusetts*.

ARTICLE 8.—By accepting their commission the members of the Jury declare to agree fully with all provisions of this present programme and to renounce entirely to compete.



THE PALACE OF PEACE AT THE HAGUE. SITE PLAN.

NOTE.—The benchmark for the site levels is the point P on the road to Scheveningen. The levels are given in metres. The sign + P after a level figure means height above the benchmark, and the ÷ P means level below the benchmark. No scale is given with the site plan.

ARTICLE 9.—The Jury give the preference to those projects that answer best to the requirements of this programme and excel from the point of view of art and construction.

The following prizes will be awarded :—

A prize of	-	-	-	-	12,000 guilders.
A prize of	-	-	-	-	9,000 „
A prize of	-	-	-	-	7,000 „
A prize of	-	-	-	-	5,000 „
Two prizes of	-	-	-	-	3,000 „

ARTICLE 10.—After the publication of the decision of the Jury, all the plans sent in shall be publicly exhibited at the Hague during a month. The official report of the Jury shall also be published and deposited for inspection at the exhibition.

ARTICLE 11.—Competitors may apply for information to Mr. D. E. C. Knuttel, architect at The Hague, No. 16, Fluweelen Burgwal.

ARTICLE 12.—The projects to which a prize is awarded become the property of the Carnegie Foundation.

If the execution of a project to which a prize is awarded be entrusted to the author thereof, the amount of the prize will be deducted from his premium.

ARTICLE 13.—The building will be erected as nearly as possible at the place indicated by cross-hatching on the plan of the site here reproduced.

ARTICLE 14.—The Peace Palace shall contain the following parts :—

NOTE.—The size of the rooms given is the superficial area in square metres.

A.—COURT HOUSE.

BASEMENT STORY.

1. Dwelling of the concierge, containing four rooms and kitchen, etc., directly accessible from the park and communicating with the different stories by a servants' staircase (escalier de service).
 2. Two spare rooms, sufficiently light and communicating with each other.
 3. A place for the calorifères with fuel store.
 4. A room for the stenographers.
- Further, as far as the available space and the construction will allow, wardrobes, lavatories, etc., servants' rooms, waiting-rooms, and store-rooms.

PRINCIPAL STORY.

The floor of the principal story must not be more than 2.50 M. above the exterior ground level.

1. Great hall with main staircase.
2. Staircase leading to the basement story.
3. Doorkeeper's room.
4. Large Court of Justice, with or without an ante-room, with a removable podium and a gallery either along a side wall or at the end - - - - - 280 to 300 M²
5. Small Court of Justice - - - - - 140 to 150 M²
6. Adjoining each Court of Justice a council room, each - - - - - 40 to 45 M²
With waiting-room, wardrobe, lavatory, etc. (If the council rooms are close together, one waiting-room, lavatory, and wardrobe for both will be sufficient.)
7. Two rooms for the parties in the case, each 40 to 45 M²
8. A chancery room with a vaulted safe (2 x 2 M.) and book-lift to the upper story - 40 to 45 M²
Messengers' rooms, wardrobes, lavatories, etc.

The council rooms shall have each a separate or together one joint exit to the park, either directly or through the basement story.

UPPER STORY.

1. A room for the Conseil Administratif of the Permanent Court of Arbitration (a council room for 30 to 35 persons around a table) - - - - - about 90 M²
With an ante-room and a president's room 20 to 25 M²
2. A room for the general-secretary - - - 40 to 45 M²
With a waiting-room and lavatory, etc. - 15 to 20 M²
3. Two secretaries' rooms, each - - - 25 to 40 M²
With one joint waiting-room and lavatory, etc.
4. Two rooms for clerks, each - - - 20 to 35 M²
5. One room or two communicating rooms for archives, together - - - - - about 80 M²
6. Four study-rooms, each - - - - - 20 to 25 M²
Messengers' rooms, wardrobes, lavatories, etc.

B.—LIBRARY.

The Library must be built so as to form a separate part of the Peace Palace, with its own main entrance from the park and interior communication with the Court House on the principal story.

BASEMENT STORY.

1. Dwelling of the concierge, containing four rooms and kitchen, etc., directly accessible from the park and communicating with the different stories by a servants' staircase (escalier de service).
2. Store-rooms and packing-rooms.
3. Bookbinder's workshop.
4. Place for the calorifères with fuel store.
5. Spare rooms.

PRINCIPAL STORY.

The floor of the principal story must not be more than 2.50 M. above the exterior ground.

1. Doorkeeper's room.
2. The library, where the books are stored (fireproof, 10,000 M. bookshelves in five stories, lighted by windows from at least two opposite sides) - - - - - about 500 M²
3. Two reading-rooms, each - - - - - „ 60 M²
4. Adjoining an office-room for the distribution of the books - - - - - 40 to 45 M²
5. Two rooms for the librarian and sub-librarian, each - - - - - 40 to 45 M²
6. A waiting-room - - - - - about 20 M²
7. Two rooms for clerks, each - - - - - „ 25 M²
8. A room for geographical maps - - - - - „ 60 M²
9. A cataloguing room - - - - - „ 60 M²
Messengers' rooms, wardrobes, lavatories, etc.

UPPER STORY.

1. A room for the Board of Directors of the Carnegie Foundation - - - - - about 40 M²
With a waiting room - - - - - „ 30 M²
2. A chancery room - - - - - „ 40 M²
3. Spare rooms.
Messengers' rooms, wardrobes, lavatories, etc.

The Hague, August 15th, 1905.

The Board of Directors of the Carnegie Foundation.

VAN KARNEBEEK, *Chairman.*

S. VAN CITTERS, *Secretary.*

NOTE.—The measures are given in mètres, the mètre being equivalent to 39.37 English inches.

A Sketch of Irish Ecclesiastical Architecture.

III.—VAULTS, ARCHES, AND CHANCELS.

THE stone roofs of Ireland have been compared to those in Central Syria (described and illustrated in De Vogüé's *Syrie Centrale*), which are at all events earlier than 634 A.D. But the construction of the eastern examples is (except in the pyramidal roofs crowning tombs) not very similar, and they are at least not double.

Of the double stone roof the building called 'St. Columba's House' at Kells, County Meath, affords a very interesting example. Its length (internally) is 19 ft. with a breadth of 15 ft. 5 in.; it is 38 ft. high to the ridge of the roof. The walls are 3 ft. to 4 ft. thick, and the crown of the vault is 23 ft. above the floor. The building had three storeys, a wooden floor dividing the two lower ones. This is now gone, but its place is marked by a recess in the wall and by the original entrance, which was in the west wall 8 ft. from the ground, reached, no doubt, by a ladder, as in the Round Towers. The whole would form a complete monastic establishment on a small scale, at the same time admitting of passive defence—to annoy the assailants would be almost impossible, and

this is to a large extent the weakness of the Round Towers as well. The ground floor was the chapel; the altar appears to have been away from the wall towards the middle of the floor; there are recessed seats for the principal and assistant priest in the west wall. The first floor, covered by the barrel vault, would be the refectory and living room; and the uppermost storey, between the vault and the outer roof, was, no doubt, the dormitory.

This vault is of a kind which continued to be built without any important change at least down to the fifteenth or sixteenth century in Ireland (though it is not confined to that country),⁷ and it was in general constructed as follows:—A centering of the required shape was made of stones, or earth, or both—or of timber—and was covered with wattles. Upon this more or less wedge-shaped or merely flattish stones—roughly shaped perhaps, but not cut—were laid edge downwards, lengthwise to the building, smaller stones being inserted into the intervals, where necessary, so as to give the radiation, until a complete vault was formed. Upon this half-liquid mortar was poured until the

⁷ It is much used, for instance, in the Bishop's Palace at St. David's, and it is to be found also in the ruined priory at Haverfordwest.



'ST. COLUMBA'S HOUSE,' KELS, COUNTY MEATH.



CROFT OF 'ST. COLUMBA'S HOUSE,' KELS, COUNTY MEATH. SHOWING ARCH IN CROSS-WALL AND TRAP-DOOR.



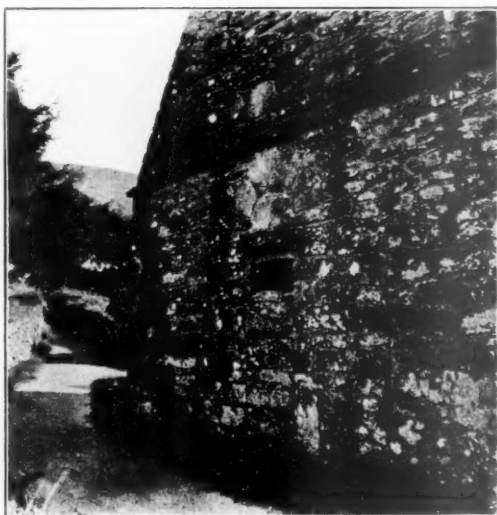
'ST. KEVIN'S HOUSE,' GLENDALOUGH, FROM S.E.

gaps between the stones were filled; in many cases the lower face of the vault is more or less covered with the mortar—often the print of the wattles (and sometimes bits of them) can be seen in it. If this mortar was good, as it generally was, the result would be a sort of solid concrete arch; and even if the cement perished the construction was generally sound enough to hold up the vault, though a few of the smaller stones might drop through from time to time. The sides were then filled up so as to make a flat floor above; at the same time, by thus weighting the sides of the vaulting, its outward thrust was counteracted. Lastly, the propping was removed, and the wattles broken or burnt away. Above such a vault as this the high-pitched roof was built—the stones being wrought to the proper shape and simply laid one above another in mortar—and closed at the top on the inside with flags, the ridge of the roof being completed outside. This is very much like the roof of the oratory at Gallarus, though, of course, the use of mortar gives as great stability with a smaller quantity of material. At Kells this stability is further secured by carrying two walls across the top storey to support the outer roof; these are pierced in the centre by low doorways with inclined sides, which are finished above with rough but true arches constructed somewhat like the vault already described. Thus the croft, which is more than 6 ft. high in the centre, is divided into three little rooms of not quite equal length but averaging 5 ft., and is

lighted on the east by a square-headed window with inclined sides, and at the west end by two openings irregularly shaped. Beneath these is a trap doorway, built of large stones, opening through the vault, to be reached by a ladder from the first floor.

What was the history of Kells as an ecclesiastical establishment before the beginning of the ninth century (if it had one at all) is by no means clear. At that time the monks of Iona found by bitter experience that their island was terribly exposed to Danish raids, and planned to transfer the chief seat of their order to a safer place. In 804 "*Cenannus* [Kells] was given without battle to Columcille"; in 807 we hear of "the building of the new city of Columcille at *Ceninnus*"; and in 814 that the church there was completed. It is contended that 'St. Columba's House' was a part of the buildings erected at this time, and that is possible, though there are no means of proving it.

'St. Kevin's House' (or 'St. Kevin's Kitchen,' as it is called) at Glendalough is a building similar in general plan; it has a high stone roof above, a barrel-vault below, and a croft between these reached through a hole in the vault. But it has no cross-walls in the croft, and its entrance was on the ground floor—a square-headed doorway with a relieving arch above the lintel, as in the cathedral close by. The door was probably hung like a shutter outside; there were two holes in the lintel (which projects 6 in.) for hanging it, and a hole in the flag below for fixing it. We have already seen that there is a similar arrangement, but on the inside of the doorway, at Gallarus.*



WEST DOORWAY, 'ST. KEVIN'S HOUSE,' GLENDALOUGH. SHOWING PROJECTING LINTEL AND RELIEVING ARCH.

* See *Architectural Review*, June 1905, p. 287.



STONE-ROOFED SACRISTY, DUNMOE CHURCH,
NEAR NAVAN.

The building has a squared string-course marking the point where the roof springs from the walls. There is something similar in the cell now turned into a tool-house at Kilmalkedar, as well as in St. Mary's Church at Glendalough. It had two windows, one above the other, in the east wall (besides that which lights the croft), the upper one is a square-headed slit, the lower one was round-headed; and there was a large window (a later addition) in the south wall. But the whole has been much altered and added to. It has been thought that parts of the masonry below are the remains of a still earlier building. And to the 'House' or oratory a stone-roofed chancel was added (the spring of its barrel-vault is still very plainly to be seen), the east wall being simply cut through so as to form a semicircular-headed opening, though no real arch was constructed there. This destroyed the lower part of one of the east windows, and the top of it was then filled up. On the north side of the chancel was built a stone-roofed sacristy, which still remains, though the chancel was destroyed early in last century; neither of these has been bonded into the older building.

A sacristy (called in Irish *erdam*, *irdom*, that is to say, 'side-house') was in many cases attached to Irish churches from very early times. One is mentioned, under the description of *exedra*, *quæ oratorii adhærebat parieti* and of *exedriolæ separatæ conclave*, in Adamnan's *Life of St. Columba* (iii. 19) as existing at Iona in the saint's lifetime—that is, by 597 A.D. "The great gospel of Columcille [the Book of Kells] was stolen at night from the western sacristy of the great church of *Cenannus*" in 1006 A.D. Such sacristies continued to be built, and there are a good many examples

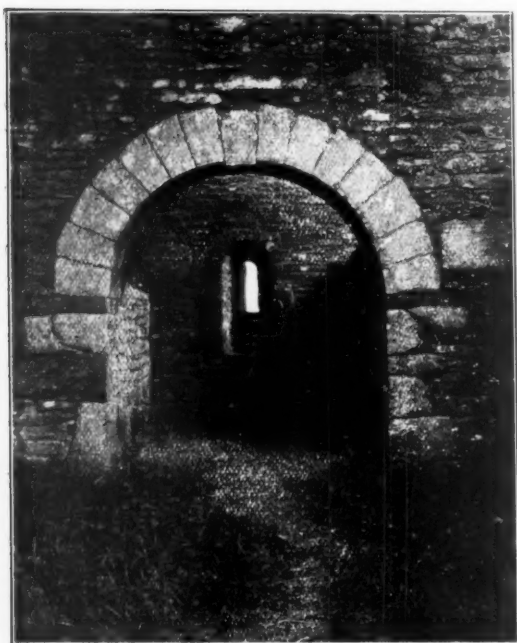
remaining in Ireland, which are often set at right angles to the church, on one side or the other, like a transept, constructed of stone, and frequently roofed with the same material—such as that attached to the chancel at Clonfert, to one of the churches at Lorrha, near Portumna, to the little church adjoining Dunmoe Castle, between Navan and Slane (this sacristy, most exceptionally, has a crypt underneath), as well as at Clonmacnoise, on the south side of the cathedral, where, above the stone vault, there are domestic buildings with a conspicuous chimney. These are of Gothic character, but it is quite probable that an earlier structure is represented or included; the cathedral would doubtless possess a sacristy from the first.

To 'St. Kevin's House' a Round Tower of different masonry has been added, crowning its west end. The cap of this reaches a height of 40 ft. from the ground. There are three holes in the vault below it for bell ropes, and windows to let out the sound. The name of the building suggests that it represents (or was held to represent) the original cell or oratory of the saint, like 'St. Declan's House' at Ardmore.

There are a good many later examples of the double stone roof in Ireland. About these something will be said presently. It is probably an Irish invention—a very successful combination of the true arch or vault, learnt from abroad, with the native stone roof. The very high pitch of the roof (about 65°) may have been intended to give dignity to these buildings, but it is safer construction as well, and certainly tends to keep



CHANCEL ARCH, KILLINEY, NEAR DUBLIN.



CHANCEL, TRINITY CHURCH, GLENDALOUGH.

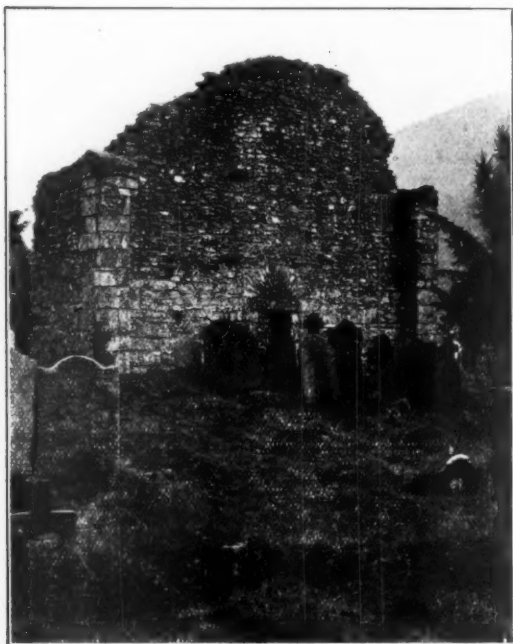


CHANCEL, TRINITY CHURCH, GLENDALOUGH.

them dry; the bedding of the stones at an angle and avoiding continuity in their joints serve the same end.

It appears to be practically certain that the Irish had begun to build stone churches with mortar before structural chancels had been accli-

matized in Ireland. One instance of a chancel being added to an older building has just been mentioned. The cathedral at Glendalough supplies another—the chancel is not only of different masonry from the nave, but is not bonded into it. The chancel of St. Caimin's Church, Iniscealtra,

CATHEDRAL, GLENDALOUGH, SHOWING ANTAE
AND RELIEVING ARCH OVER LINTEL.

WEST DOORWAY, REEFEART CHURCH, GLENDALOUGH.

is clearly much later than its nave.⁹ And to many churches no chancel was ever added. Probably the most important of these is the cathedral at Clonmacnoise, which, with all the alterations which it has undergone, has never had a chancel, except such as was made by groining over the east end in the fourteenth century. On the other hand, some quite small churches were provided with one. A tiny church close to 'St. Kevin's House' has a chancel measuring 8 ft. to 9 ft. square inside. But, though chancels came in later than stone churches built with mortar, there had been no very marked change of style in the meantime. The square-headed east window and west doorway and the chancel arch, with inclined sides, at Killiney all have a very primitive appear-



REEFEART CHURCH AND CHURCHYARD, GLENDALOUGH.



GATEWAY TO MONASTERY, GLENDALOUGH,
SHOWING ANTAE.

ance. Trinity Church, Glendalough, (which at an earlier time was probably called 'St. Mochuarog's,')¹⁰ built of mica-slate with blocks of granite in its walls and granite quoins, and with a perfectly plain arch of squared granite on the two faces and rubble between, has a triangular-headed window in the south side of the chancel, and its original west door, square-headed, with inclined jambs, is much like that at Dulane. The church has small brackets projecting from the walls, east and west, at the spring of the gable, probably for supporting an overhanging wooden roof—this feature is also found at Reefeart Church, Glendalough. A Round Tower standing upon a square base and over a barrel vault was a later addition to its west end. This church is particularly impressive from its excellent construction and its massive simplicity. It has no ornament (unless a plain horizontal drip-stone over the east window can be considered

such), and looks just like Roman work, built for practical purposes. So too the arches of the gateway to the monastic precincts of Glendalough¹¹ bear a strong resemblance to the Roman gate at Lincoln. (The outer arch, like a church door, has *antae* on each side of it.) Reefeart Church, a little way up the valley, is striking in a similar way. Like the entrance to the monastery, it needed some rebuilding (out of the original stones) in the latter part of last century. The ornament round its square-headed west doorway has never been completed. Reefeart was, as the name implies, a royal burial-place, but its churchyard has not now the reputation for sanctity which centres round the cathedral of Glendalough, and crowds the ground there (as at Clonmacnoise) with modern graves; consequently very many of its crosses and



CHANCEL ARCH, REEFEART CHURCH, GLENDALOUGH.

⁹ In these the details of the chancels are Irish Romanesque; but it is of course possible that chancels already existing may have been more or less completely re-built.

¹⁰ See *Architectural Review*, August 1905, p. 73.

¹¹ These supported a tower, part of which was still visible in 1795. See Fisher's *Scenery of Ireland*.



CHANCEL ARCH, TEAMPULL NA NEAVE, INCHAGOILL.

gravestones have been preserved, more or less in their original position, as is the case too in a cemetery on Iniscealtra. Some date like the eleventh century (which was, owing to its comparative peacefulness, a great time for building and rebuilding churches in Ireland) seems to fit Reefeart and Trinity Church; they show thoroughly workmanlike construction in stone, but not a trace of Norman influence. However, this is perhaps assuming an answer to the question as to the date of Irish Romanesque—on which something must be said presently—and there appear, in any case, to be no means of fixing their date with certainty.

The arches mentioned so far are not only perfectly plain, but do not spring from capitals or from imposts. "A projecting unsquared block of stone inserted between the top of the shaft and the spring of the arch in the rude church of Kilmacduach, in Aran, is," says Miss Stokes, "the first indication we have met of an impost being thought desirable." At *Teampull na Neave*, on Inchagoill, an island in Lough Corrib, the impost is squared—it is very much like a bit of the string-course marking the junction of roof and walls in 'St. Kevin's House.' At Ought Máma, County Clare, it is chamfered. This is a natural course of development; but it does not of course follow



CHANCEL ARCH, OUGHT MÁMA, COUNTY CLARE (?).



CHANCEL ARCH, FRIARS' ISLAND, NEAR KILLALOE.

that those particular churches were built in that order.¹² The arches sometimes have a rather loose connection with the wall which they support. At the small church on Friars' Island, near Killaloe, the little chancel arch is greatly set back from the jambs (a similar feature at St. Mary's, Wexford, is depicted in Grose's *Antiquities of Ireland*). This form of arch is used as the frame or niche to a picture, probably of an Evangelist, in the Book of Kells (which is believed to date from about 700 A.D.¹³), and it may have been copied by the architect from this or some similar MS. Few will consider the building to be the prototype of the drawing. There are architectural ornaments in the Book of Kells which have no counterpart in actual Irish architecture—notably, one showing the sort of squared flower-pot above the capital, which is really a fragment of entablature

(something like that which Caryatides support), though it looks like an extra capital. This occurs in the churches of Central Syria (illustrated by De Vogüé) and in the church of St. Lawrence, outside the walls of Rome, but there seems to be nothing like it in Irish architecture, which is not too fond of having even a single distinct capital to a column.

ARTHUR C. CHAMPNEYS.

(To be continued.)

NOTE ON ILLUSTRATIONS.—The name of a church illustrated on p. 124 has become illegible on the photograph. I believe it to be that at Ought Máma; at all events the picture represents the chancel arch there in all essential particulars. This view is from a photograph by Messrs. Langhler, of Bond Street; that of *Teampull na Neave* is by Messrs. Welch, of Belfast. The rest are from photographs taken by the writer, developed and printed by Messrs. Seaman, photographers, Ilkeston.

¹² *Teampull na Neave* is in the main an Irish Romanesque Church; but early features are frequently continued or reproduced in later Irish architecture.

¹³ Though some place it even as much as a century later.

Ownership of Architects' Plans.

AN architect enters into an agreement to build a house and to design the necessary plans. To whom do the plans belong in the absence of express agreement? This is, to architects, an important question, and all the more so that the law of England at the present moment appears to be against them.

It is naturally a well settled rule of law that if one employs another to do work and pays for it, the results of that work belong to the employer, and this would be the rule to govern the question of the ownership of architects' plans, were it not for an alleged special custom that the plans shall remain the property of the architect.

There is an elementary rule of construction that a written contract cannot be extended or varied by evidence of matters outside the written words of the contract. To this rule there is the following exception:¹ "Where the contract is silent, parol (or verbal) evidence is admissible to show a custom; . . . but both parties must be cognisant of such usage, so as to be presumed to have contracted with reference to it, and the custom must not contradict the contract, and further, the custom must be reasonable." Thus the architect has three lines of defence to overcome. Firstly he must prove that there is a custom, secondly that the building owner knew of it, and thirdly that the custom, even if it exists, is reasonable. The first of these obstacles presents some difficulty. The

custom was actually found to exist in 1870 by the verdict of the jury in *Ebdy v. McGowan*, yet an architect gave evidence in that case that there was no such custom, and the Court before which the appeal came threw considerable doubt on the correctness of the verdict.

But assume that the architect succeeds on the first two points, even then, if a recent decision of the Court of Appeal is correct, he fails on the third; for the custom is said to be unreasonable. The courts of law appear to look with some suspicion upon special customs in general and on the customs of architects in particular. In the case of *Gwyther v. Gaze* in 1875,² an architect was employed to build a warehouse and shop. Three tenders were sent in, but none were accepted, and the building owner employed another builder without a contract, paying for the work as it progressed. The architect claimed a payment of 2½ per cent. on the lowest tender, alleging that this was, by the usage of architects, the proper charge: the judge, however, held that the custom was unreasonable, and refused to follow it in assessing the payment due. So also a usage for contractors to rely on the specification furnished by the building owner's architect without examining it was held to be bad,³ and also in America a custom among architects to charge for preliminary sketches a sum representing more than the time actually spent in preparing them.⁴

¹ *Building Contracts*, Vol. I. p. 137.

² *Times*, Feb. 8, 1875; 2 *Hudson* 16.

³ *Thorn v. Mayor of London*, 1 A.C. 120.

⁴ *Scott v. Martin*, 56 A.M. Rep. 402.

All the authority directly on the question of the custom to retain plans is dead against the architect. In 1870, in the case of *Ebby v. McGowan*⁵ above referred to, the Exchequer Court decided that when the architect has been paid he must hand over the plans: there were, however, special facts in this case, and the decision may not have been meant to be of universal application. A clergyman asked an architect to prepare plans and specifications and get tenders for the erection of a vicarage house and other buildings; if the buildings were completed, the architect was to get 5 per cent. on the total expenditure; if tenders were given and the work commenced, 3 per cent. on the estimated value: if plans only were drawn and no building done he was to be paid 2½ per cent. on the estimated value. The building was never commenced, and the clergyman claimed to have the plans handed over to him; but the architect relied on the supposed special custom and refused to part with them. The Court decided against the custom, but chiefly on the ground that in this case the clergyman would get nothing for his money if he did not get the plans. Lord Chief Baron Kelly condemned the custom in these words: "It appears contrary to reason, good sense, and justice that in the event of a contract being put an end to, the architect should retain the plans for which he was entitled to be paid . . . the execution of the plans themselves formed the work and labour for which he charged the defendant." And Baron Bramwell condemned the custom with the somewhat exaggerated metaphor, that the custom was perfectly suicidal; so soon as it was brought into being it cut its own throat with its own absurdity.

American⁶ and Canadian⁷ courts have also decided against this custom, and if the architect turns for comfort to the similar customs of other professions he is met by the same uncompromising denial. Estate agents have claimed to retain plans, and solicitors their rough drafts, but both have been defeated. The decision against estate agents was based upon broad principles of the law of agency. In *Lady Beresford v. Driver* (1852),⁸ land agents were employed by Lady Beresford's husband for many years to survey and collect the rents of her estate at Waterbeach. Lady Beresford afterwards ceased to employ them and demanded delivery up of all papers, plans, and documents connected with the estate. The agents, however, claimed to retain certain rough maps, plans, and notes made by them for their own convenience in connection with their work of sur-

veying the estate. It was held that all these documents having been made by them while acting as agents for Lady Beresford and her husband must be given up to her.

The solicitor's case is *Ex parte Horsfall*⁹ (1827). One Lythgoe had been employed for several years by the plaintiff's father as his solicitor. On the death of her father the plaintiff applied to have all deeds and papers in Lythgoe's possession delivered up to her, and offered to pay his bill of costs. Lythgoe delivered up all the original deeds and documents, but claimed a right to retain the drafts and copies. In this claim he was defeated.

In spite of these adverse decisions it seems still to have been the general view of architects that where a building is actually completed the plans belong to the architect, and the recent decision of the Court of Appeal in *Gibbon v. Pease*¹⁰ has come upon them as an unwelcome revelation. The facts are stated in the report as follows:—

The plaintiff was the owner of certain houses in Bayswater, which he was desirous of converting into residential flats. The defendant was an architect and surveyor, and was employed in that capacity by the plaintiff upon the work necessary to the contemplated alteration of the houses, on the terms that the defendant should receive for his services five per cent. on the contract price of the works to be executed. The defendant prepared plans and specifications and superintended the work, which was completed. The plaintiff paid to the defendant the stipulated fee, and claimed to have the plans and specifications handed over. This the defendant declined to do, and this action was brought to recover possession of them. At the trial evidence was tendered on behalf of the defendant of a custom under which an architect in circumstances like those of this case was entitled to retain the plans and specifications as his own property. The learned judge refused to admit the evidence, being of opinion that the custom proposed to be established by the evidence was unreasonable, and judgment was entered for the plaintiff.

The defendant appealed.

The Court of Appeal decided that the custom, even if proved, would be unreasonable, and therefore bad. They expressly followed *Ebby v. McGowan*, and refused to see any distinction between the two cases. Lord Justice Cozens-Hardy also relied on the solicitor's case, *Ex parte Horsfall*.

⁵ Hudson, Vol. II. p. 7; *Times*, Nov. 17, 1870.

⁶ *Kults v. Pelby*, 37 Mass. 65.

⁷ *Moffatt v. Scott*, 8 Lower Canada, Jur. 310.

⁸ 20 L.J. Ch. 476, 22, 407.

⁹ 7 B. & C. 528.

¹⁰ 1905, 1 K.B. 810.

These authorities, as they stand, are absolutely fatal to the architects' custom. It is still possible, however, that "*Gibbon v. Pease*" may be overruled by the House of Lords, and it is therefore interesting to analyse the previous authorities and consider whether upon principle the recent decision is justified.

Ebdy v. McGowan is not likely to be set aside after thirty-five years, even by the House of Lords; but it is not by any means conclusive. The building in that case was not even commenced, and all the judges rely upon that fact as the basis of their decision: the argument pervades the whole of their judgments that if the building owner did not get the plans he would get nothing for his money. American and Canadian cases are not binding in this country, and need scarcely be considered for this purpose, and the decisions against the estate agents and solicitors really raise quite different points. An estate agent is a general agent, employed to manage an estate, and, in consideration of the commission paid him, to do everything necessary for the proper conduct of the estate; all acts, therefore, that he does, he does as agent for the owner, and he would have no power or authority to do them if he were not acting as such agent. It is reasonable, therefore, that the employer should be entitled to the results of all that is done. Again, a solicitor's bill of costs is quite a different matter from an architect's contract. A client who requires a deed is charged in the bill of costs separately for the drafting of the deed, and separately also for the engrossing, and for any additional copies that may be required. Here, too, it would be unreasonable that the client should be refused possession of documents, for each one of which he has specifically paid; and Lord Tenterden expressly decided the solicitor's case on the ground that "He who pays for the drafts by law has a right to the possession of them."

An architect, on the other hand, is employed to build a house, and is not paid by the number of plans he draws. Suppose a plan drawn and completed, which then fails to satisfy the architect himself; he draws another, and the building is completed according to the latter. Could it be reasonably contended that the first plan is the property of the building owner, because the architect had that owner's house in his mind when he prepared it? If not, then it seems to be the house and not the plans for which the architect is paid.

In the judgment of *Gibbon v. Pease*, the contract was compared to a commission given to an artist to paint a picture; but the true inference from that comparison seems to have been overlooked. In such a comparison the building really corresponds to the picture, and the plans to rough

sketches made by the artist. It may possibly be the law, but it certainly is not the everyday practice, for an artist to hand over to the purchaser of a picture all the rough sketches or studies on which the picture is based. In fact they are practically always retained, and are freely used by the artist if occasion requires.

The only reference to abstract principle and common sense to be found in the judgments is contained in a passage from the judgment of Cozens-Hardy, L.J.: "Unless he (the building owner) has the plans, how is he to know where the drains, the flues, and many other things are?" It is doubtful whether this would prove a serious objection in practice, most of such items being apparent on the face of the building, and it is probably very seldom that the plans are used for this purpose. The fact alone that the owners have in the past overcome such difficulties without the plans seems to show that it cannot be a matter of any great importance.

For the present moment, however, the law is against the architects. Even so there is no real cause for dismay. A little extra care in the original contract would avoid all the evil effects of these decisions. So long ago as 1870 Lord Bramwell stated in open court that the question could not be said to be one governing the future, because the parties to contracts might make their own bargains. Where the warning of so great a judge has been neglected it can hardly be hoped that this article should have a better fate, but it cannot be too strongly pressed upon the notice of architects that the remedy lies in their own hands. The architect should expressly reserve to himself the ownership in the plans drawn by him as one of the terms of every contract into which he enters. The reply will probably be that architects do not as a rule make formal contracts, but set to work on their commissions with no other evidence than the letters between the parties. If so, the remedy is simpler still; a printed note on the writing paper used by the architect for professional purposes would be effectual to give him all the protection he needs.

Again, the right of the architect to make and keep copies of his plans is not affected by these decisions. Whether the expense of taking copies of the plans prepared would be too great to justify the practice is a question for the architect himself; but, if not, again the remedy is simple; for although the question of copyright in plans is implicated in perhaps the most chaotic branch of English law, the better opinion seems to be that the copyright in the plans is vested in the architect, and he would therefore be at liberty to retain and use copies of them. A "plan" is a "book" for the purposes

of the Copyright Act, 1842;¹¹ the copyright of a book is the property of the author and his assigns;¹² and an assignment must be in writing. Therefore it would appear that unless the copyright in the plan is assigned to the building owner in writing, it remains the property of the architect. There is, however, a complicated section of the Act which contains these words: "Where any person . . . shall be the proprietor of . . . any book . . . and shall employ any person to compose the same . . . on the terms that the copyright is to belong to the proprietor, it shall belong to the proprietor."¹³ The terms referred to in the section need not be expressed, and it is a question of fact in each case whether they are to be implied. In the case of articles written for a magazine, it has been recently decided by the House of Lords that mere payment by the proprietor of the magazine raises the presumption of an agreement under sec. 18 that he is to have the copyright.¹⁴ The wording

of this section appears at first sight to apply equally to the building owner, for he is by the decisions under discussion the owner of the plan or "book." The decision, however, is based on the argument that if the proprietor of the magazine did not get the copyright, it would be impossible for him to get any return for his outlay; an argument which could not be applied in the case of architects' plans. Consequently, even if the adverse decisions stand, and no express contract is made, an architect would probably be within his rights in making for his own use and retaining copies of plans.

Whether architects as a body should rely on these suggested methods of evading the law, rather than boldly endeavour to turn the law in their favour, is a question for their own pockets. It is, perhaps, only right to conclude with the warning that in the bold endeavour they would by no means be certain of success.

ALFRED F. TOPHAM.

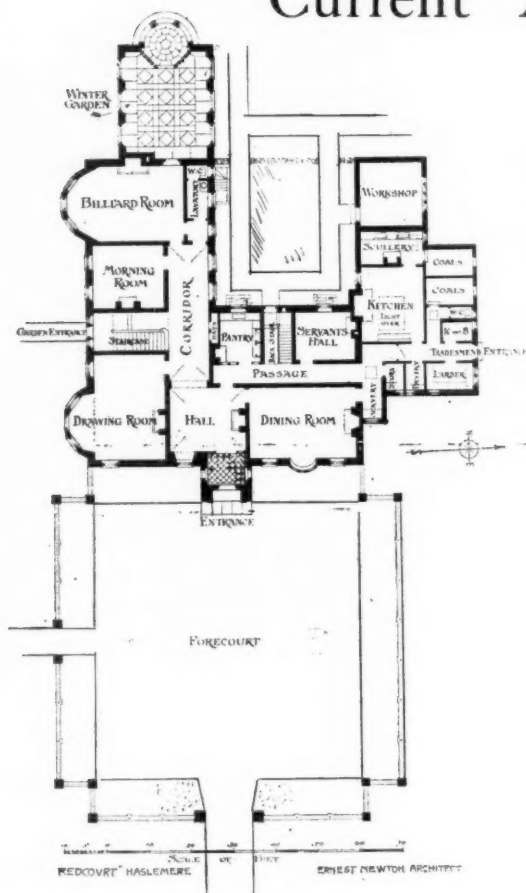
¹¹ 5 & 6 Vic. c. 45, sec. 2.

¹² Sec. 3.

¹³ Sec. 18.

¹⁴ *Lawrence & Bullen, Ltd. v. Aflalo* (1904), A.C. 17.

Current Architecture.



"REDCOURT," HASLEMERE.—This house is built of red Wrotham brick and roofed with red Wrotham hand-made tiles. The stone is Portland. All the cast lead was made by Messrs. Wenham & Waters, of Croydon; Messrs. Maides & Harper, of Croydon, were the builders; and Mr. Ernest Newton was the architect.

WEEK-END COTTAGE FOR MR. CLEMENT K. SHORTER AT GREAT MISSENDEN, BUCKS.—This cottage, which commands most beautiful views to the south, is built at the edge of a large beech wood at the head of the Missenden valley. With the exception of gables and chimneys there is no external brickwork above the first floor level. The bricks are local, of blue, grey, and red tints. The gables are covered with weather-boarding painted green, the roofs with hand-made Bedfordshire tiles. The total cost of the building worked out at less than sixpence per foot cube. The photographs are by the architect, Mr. Timothy Honnor, A.R.I.B.A., of London.

CHURCH OF ALL SAINTS, KENSINGTON.—The building in its present state is very incomplete. It is designed to have double aisles on the unfinished side, thus filling the whole of the site

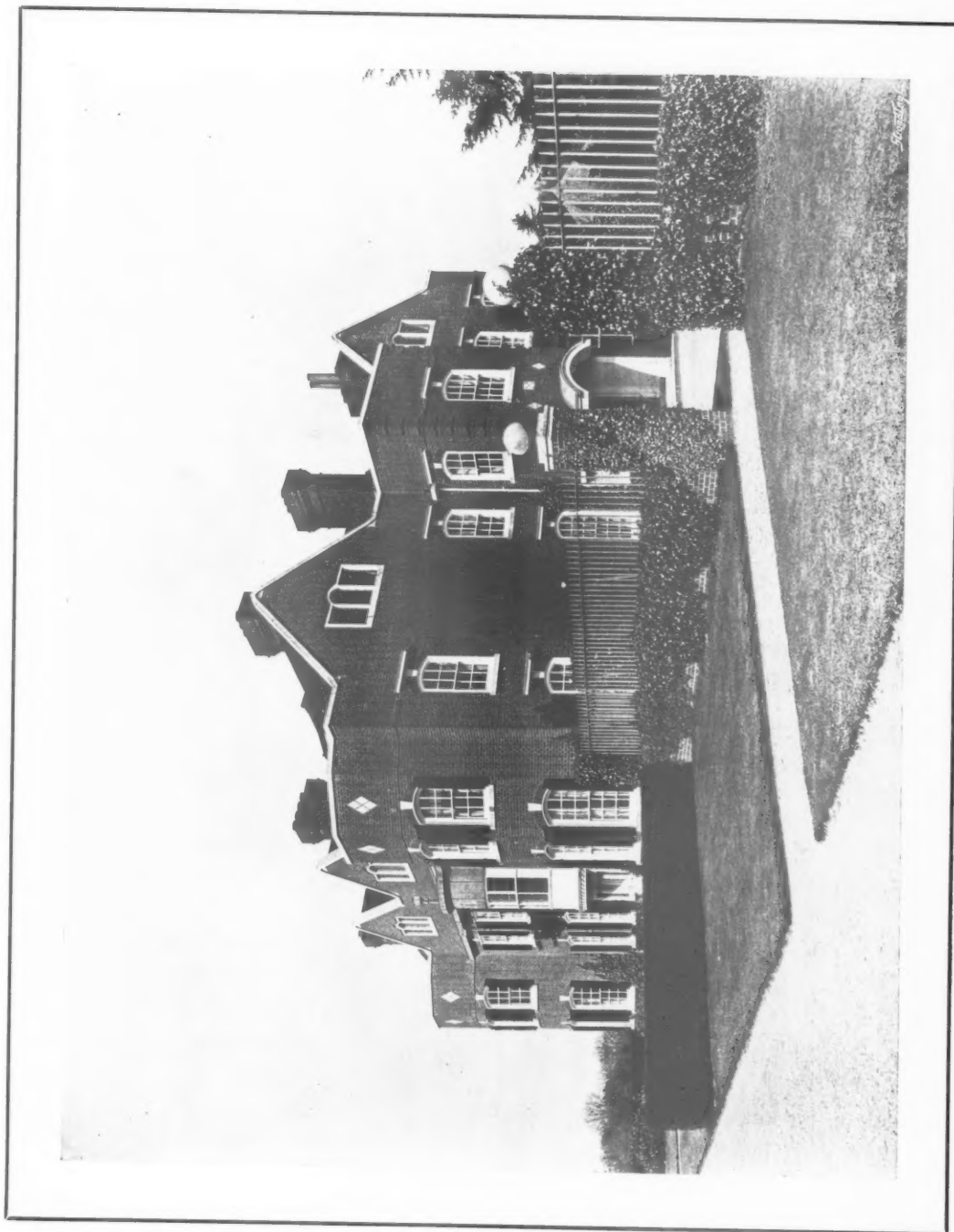
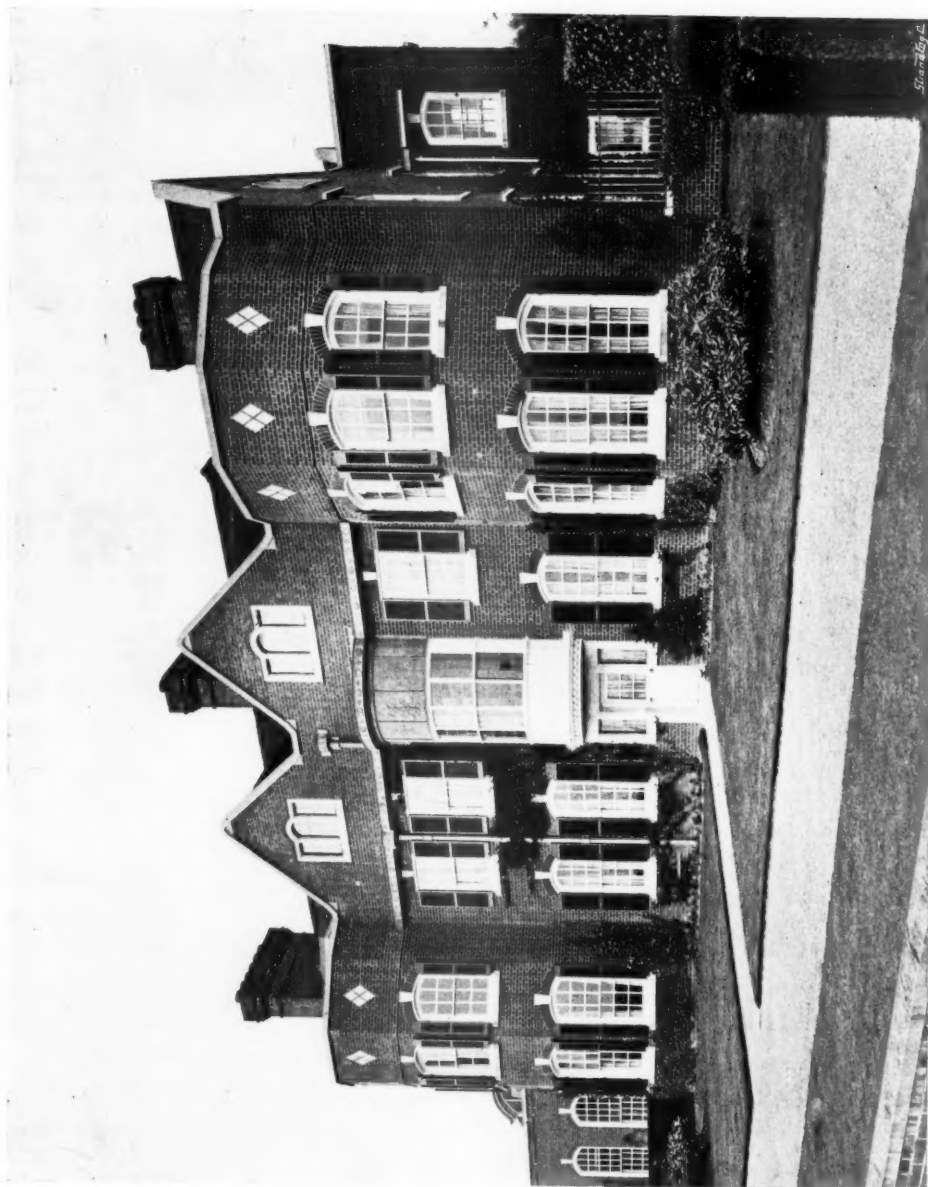


Photo: E. DeGree.

"REDCOURT," HASLEMERE.
ERNEST NEWTON, ARCHITECT.



REDCOURT,²³ HASLEMERE. GARDEN FRONT.
ERNEST NEWTON, ARCHITECT.

Photo: E. Doctree.

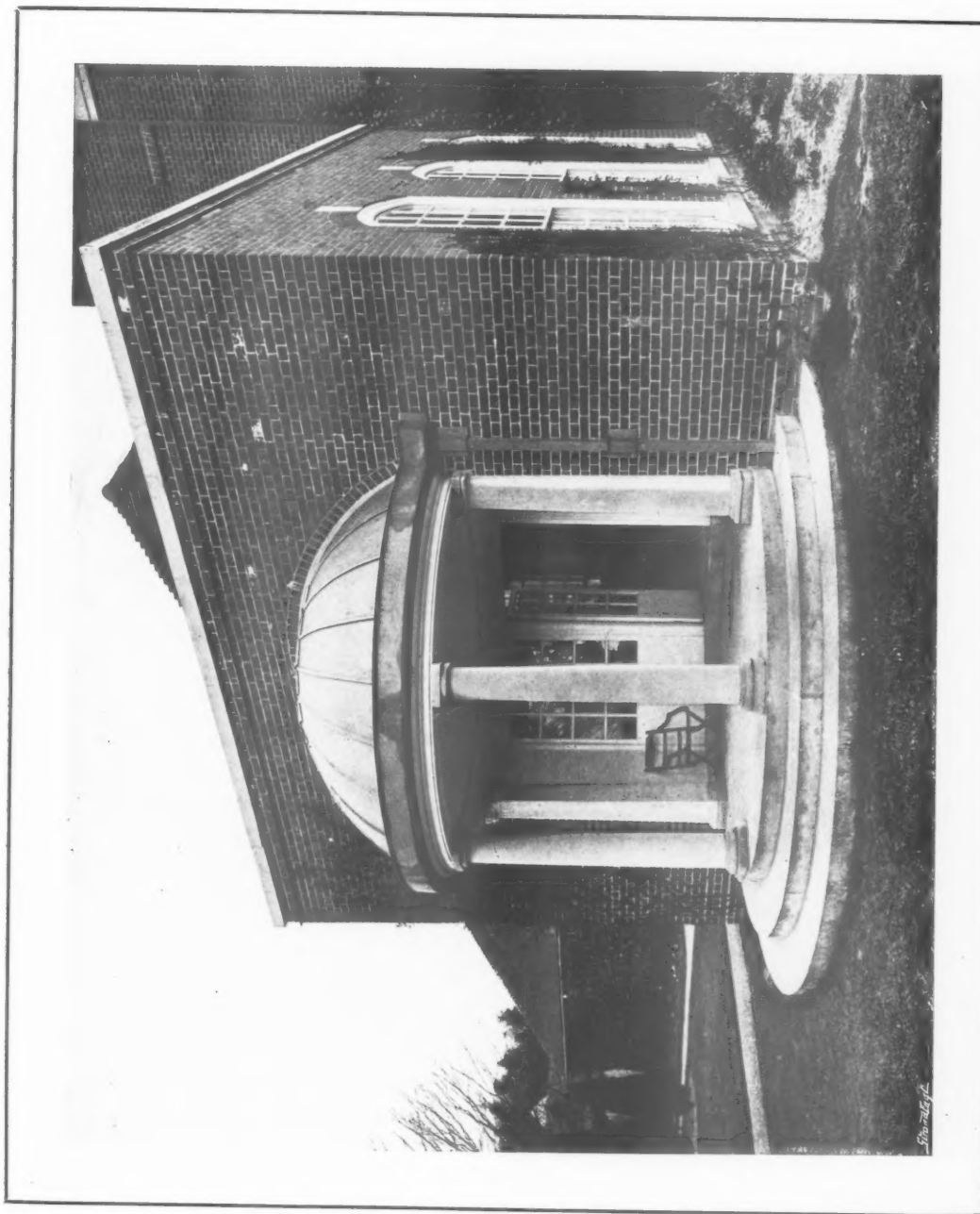


Photo- E. Doukree.

"REDCOURT," HASLEMERE. PORCH TO THE WINTER GARDEN.
ERNEST NEWTON, ARCHITECT.



"REDCOURT," HASLEMERE. THE ENTRANCE.
ERNEST NEWTON, ARCHTCT.

Photo: E. Dockree.

NOTE.—The sunblind boxes over the windows were added subsequently.

available. These aisles will have stone arches across them acting as abutments to the somewhat lofty walls, and they will have painted roofs. The intermediate aisle will be arranged as a chapel. There will be a row of large windows in the wall of the outer aisle, while the middle aisle will be with only its end window. The effect of light and shade will thus be a feature of the building. The contractors of the part built were Messrs. Stevens & Bastow. The painting was carried out from the architect's design by Mr. Jackson, of Ealing; and the oak-work of the chancel seats

and desks by Mr. Kett, of Cambridge. The hangings were from Messrs. Watts, of Baker Street. The whole has been carried out from the designs of Mr. G. F. Bodley, R.A.

PANELLING, ETC., FROM WINCHESTER COLLEGE CHAPEL.—We publish three photographs of some interesting carving and panelling which has recently been refitted in the Hall at Hursley Park for Sir George Cooper, Messrs. A. Marshall Mackenzie & Son being the architects. Concerning this panelling, Messrs. H. H. Martyn



Photo: E. Dockree.

"REDCOURT," HASLEMERE. DINING-ROOM CHIMNEYPIECE.

ERNEST NEWTON, ARCHITECT.

& Co., Ltd., send us the following particulars: "It was originally removed from Winchester to make more room in the Chancel—so we are given to understand by some old Winchester boys—but there seems no reason to doubt that it was removed to give place to the architect's pre-disposed liking for what may be termed Gothic type of work. Originally it was sold by the authorities for something like £50, and soon afterwards changed hands for £500. It was then purchased by Lord Heytesbury for something like double the amount, afterwards being

sold to some London architects at a considerable profit, who entrusted the restoration of the work to us at a cost of something like £1,000. It ultimately sold from our works for the sum of 30,000 guineas. We are afraid this deals too much with the commercial side to be of interest to you and your readers, but it undoubtedly shows the craving for anything in the way of antique work; and, of course, the fact of this being attributed to Grinling Gibbons has given it this fancy value. It will, perhaps, be of interest to some of your readers to know that underneath a piece of

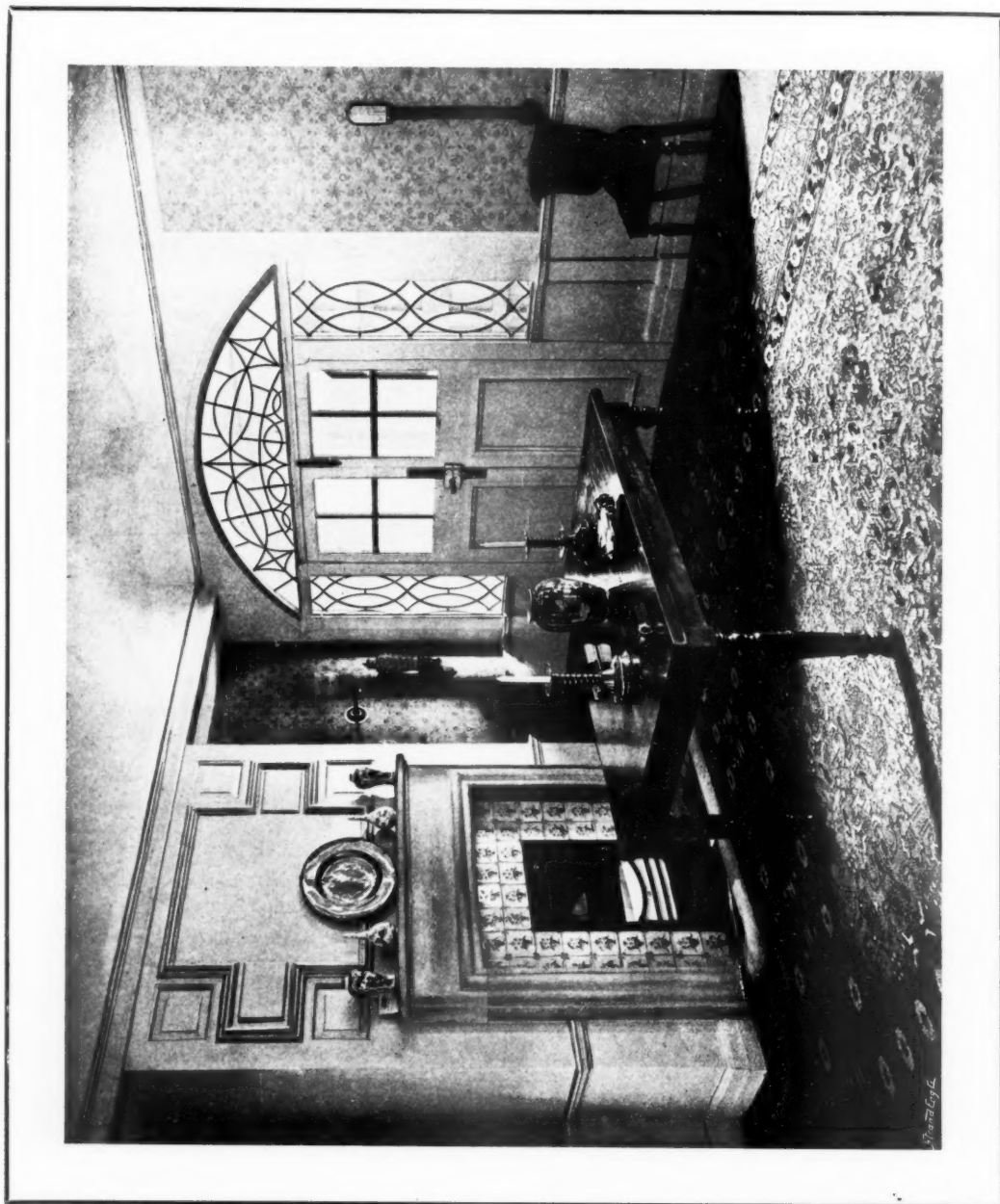


Photo: E. Dockree.

"REDCOURT," HASLEMERE. THE HALL.
 ERNEST NEWTON, ARCHITECT.

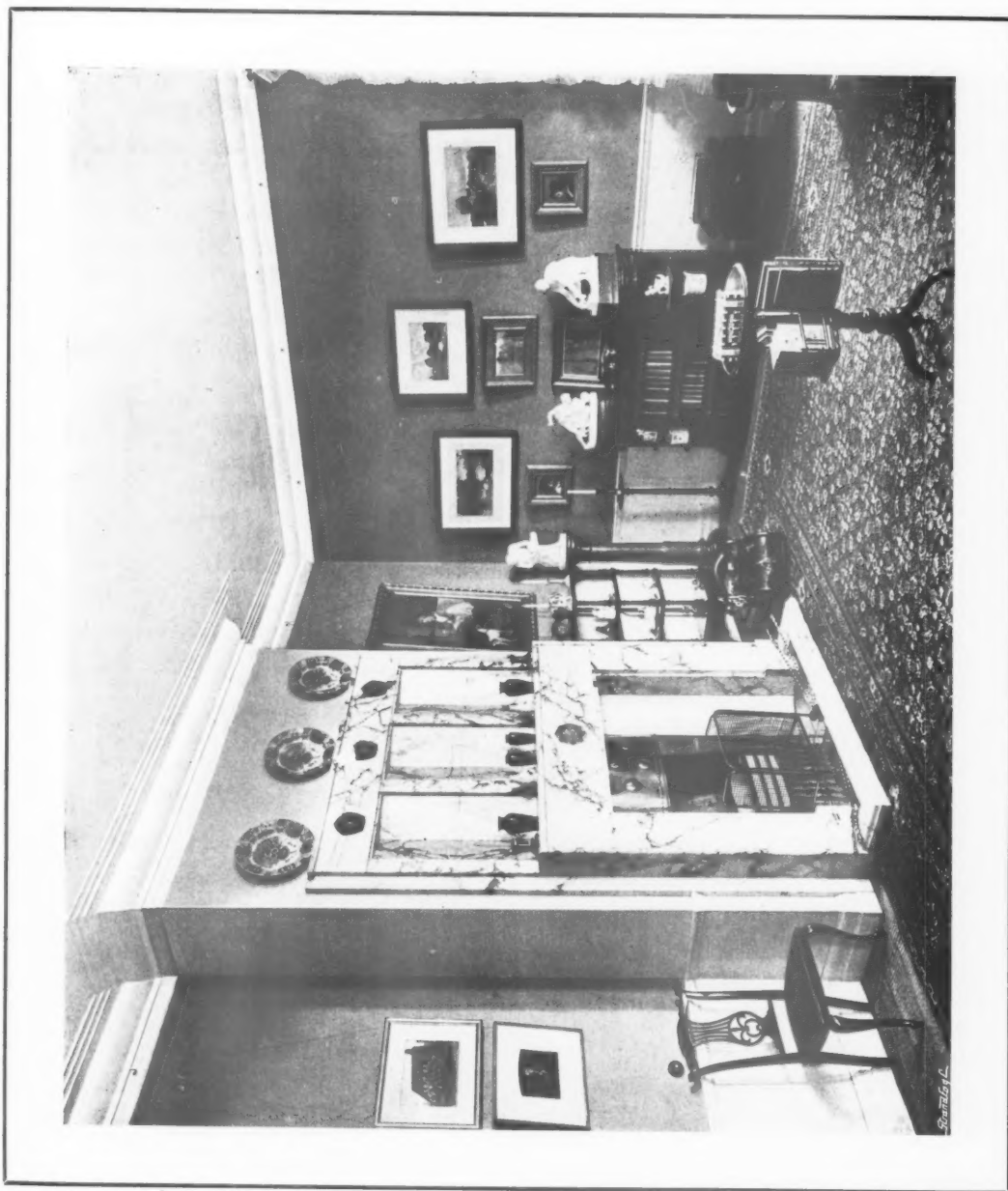


Photo: E. Doehle.

"RED COURT," HASLEMERE. THE DRAWING-ROOM CHIMNEYPIECE.
ERNEST NEWTON, ARCHITECT.



A WEEK-END COTTAGE AT GREAT MISSENDEN, BUCKS.

TIMOTHY HONNOR, ARCHITECT.

Photos: T. Honnor.

The image displays two architectural floor plans for a house, labeled 'GROUND FLOOR PLAN' and 'FIRST FLOOR PLAN'. A scale bar at the bottom indicates measurements in feet, ranging from 0 to 25. A north arrow points towards the upper right.

GROUND FLOOR PLAN:

- BAY:** Two bays are located at the top of the plan.
- LIVING ROOM:** Located on the left side.
- DINING ROOM:** Located on the right side.
- KITCHEN:** Located at the bottom center.
- HALL:** Located in the center, connecting the living room, dining room, and kitchen.
- COALS:** A small area for coal storage is located on the right side.
- STAIRS:** A set of stairs is located in the bottom left corner.
- CLIMBER:** A small area for climbing is located in the bottom left corner.
- HATS:** A small area for hats is located in the bottom left corner.
- STONE:** A small area for stone is located in the center.
- LOBBY:** A small area for a lobby is located in the center.

FIRST FLOOR PLAN:

- BEDROOM:** Three bedrooms are located on the first floor.
- BATH:** A bathroom is located in the bottom left corner.
- HALL:** A central hall connects the bedrooms and bath.
- BOXES:** A small area for boxes is located in the bottom right corner.
- BAY:** Two bays are located at the top of the plan.
- STAIRS:** A set of stairs is located in the bottom left corner.
- CLIMBER:** A small area for climbing is located in the bottom left corner.
- HATS:** A small area for hats is located in the bottom left corner.
- STONE:** A small area for stone is located in the center.
- LOBBY:** A small area for a lobby is located in the center.

SCALE OF FEET.

TIMOTHY HONNOR, ARCHITECT.

or two frames were missing. With regard to the swags oak panels: although these are in many pieces, a large proportion of them were restored with very little addition; this also applies to the wreaths over drops, the drops themselves being in much the same condition. In one or two instances we have had to put complete new pieces to complete the drops. We think it would be of interest to your readers to try to recognise which is new and which is old. Now it is fixed and all toned down, we do not think even the proprietors who purchased the work could recognise one frame from the other. The altar rail was in a very fair condition, very little of it being missing. Perhaps the most remarkable portion of this is the centre style where only half of these narrow panels were left, and it took a very considerable time to work out how that could possibly have been intended in the first instance; but we cannot believe that it could have been otherwise than as shown in the photographs."

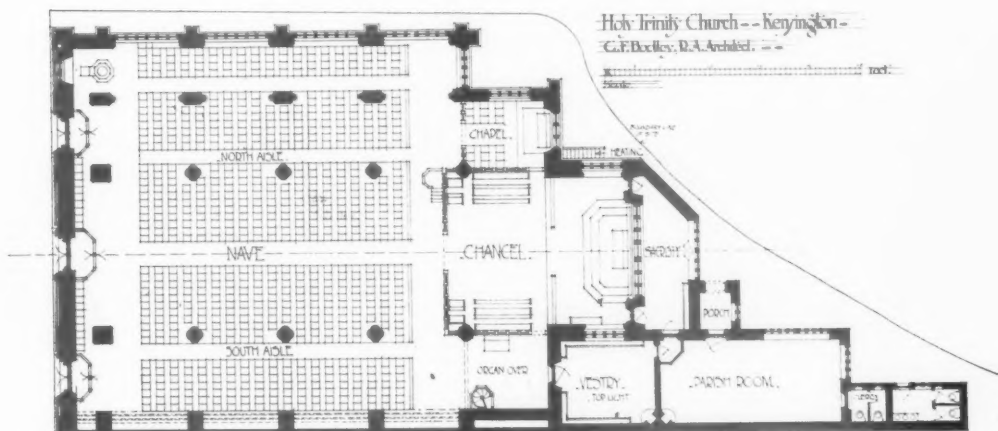




Photo: Cyril Ellis.

ALL SAINTS' CHURCH, KENSINGTON. THE FAÇADE.

G. F. BODLEY, R.A., ARCHITECT.

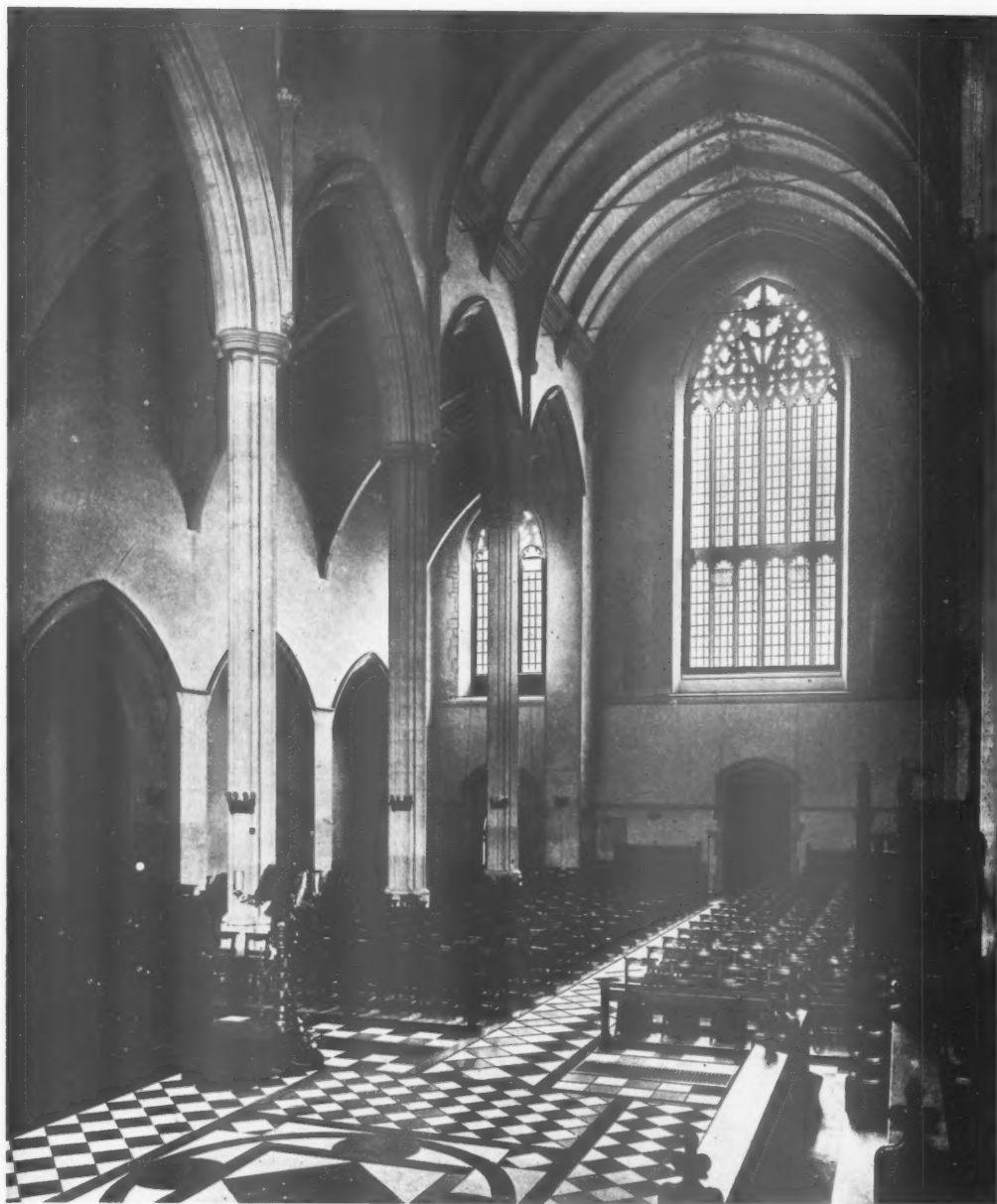
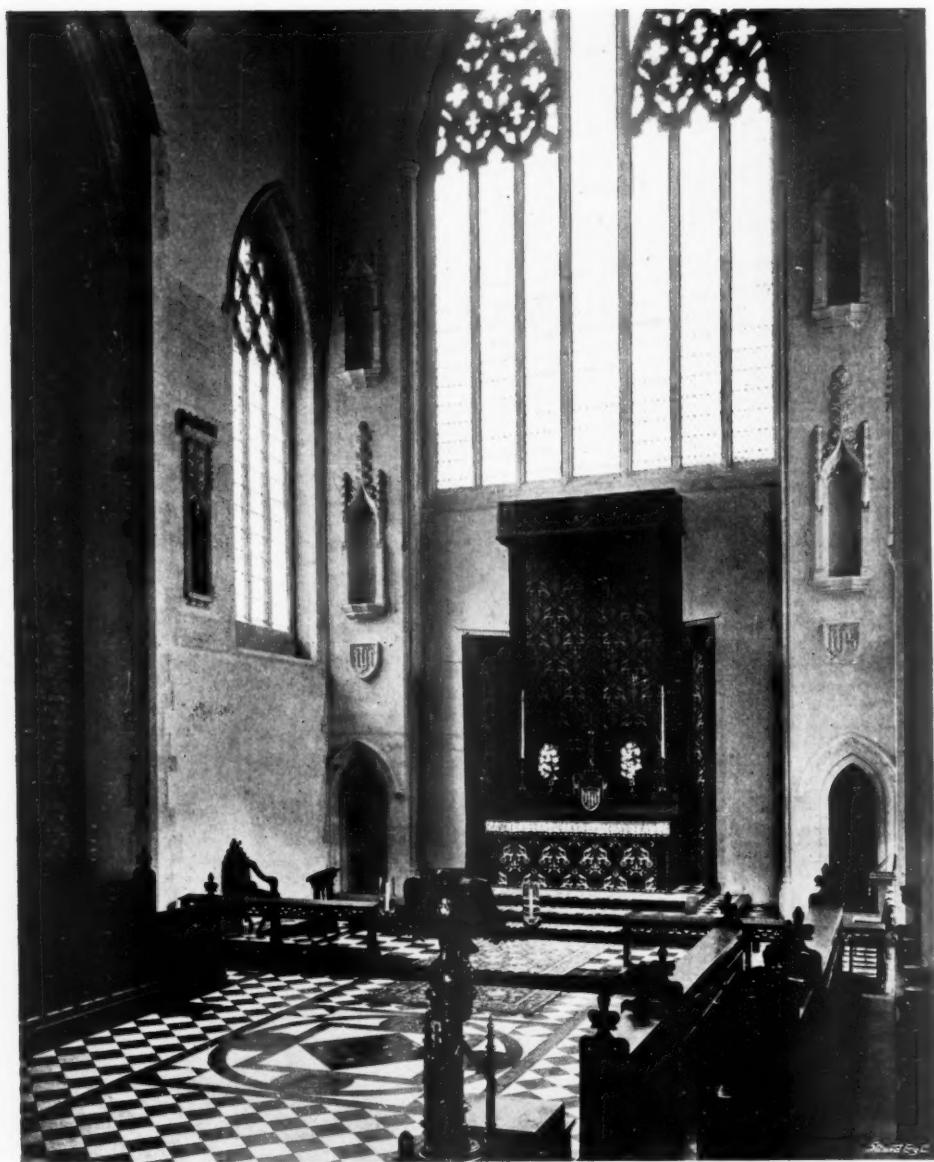


Photo: Cyril Ellis.

ALL SAINTS' CHURCH, KENSINGTON. INTERIOR LOOKING WEST.
G. F. BODLEY, R.A., ARCHITECT.

*Photo: Cyril Ellis*

ALL SAINTS' CHURCH, KENSINGTON. CHANCEL AND SANCTUARY.
G. F. BODLEY, R.A., ARCHITECT.

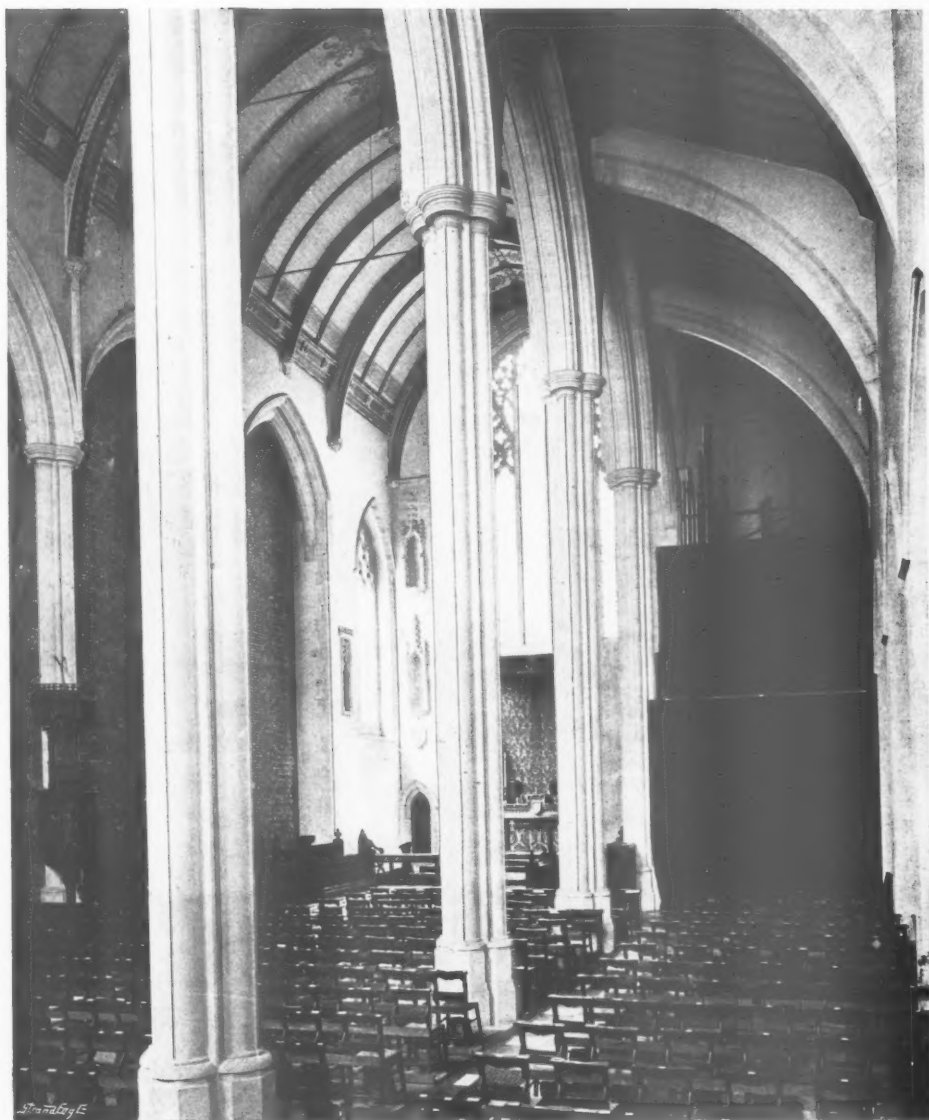


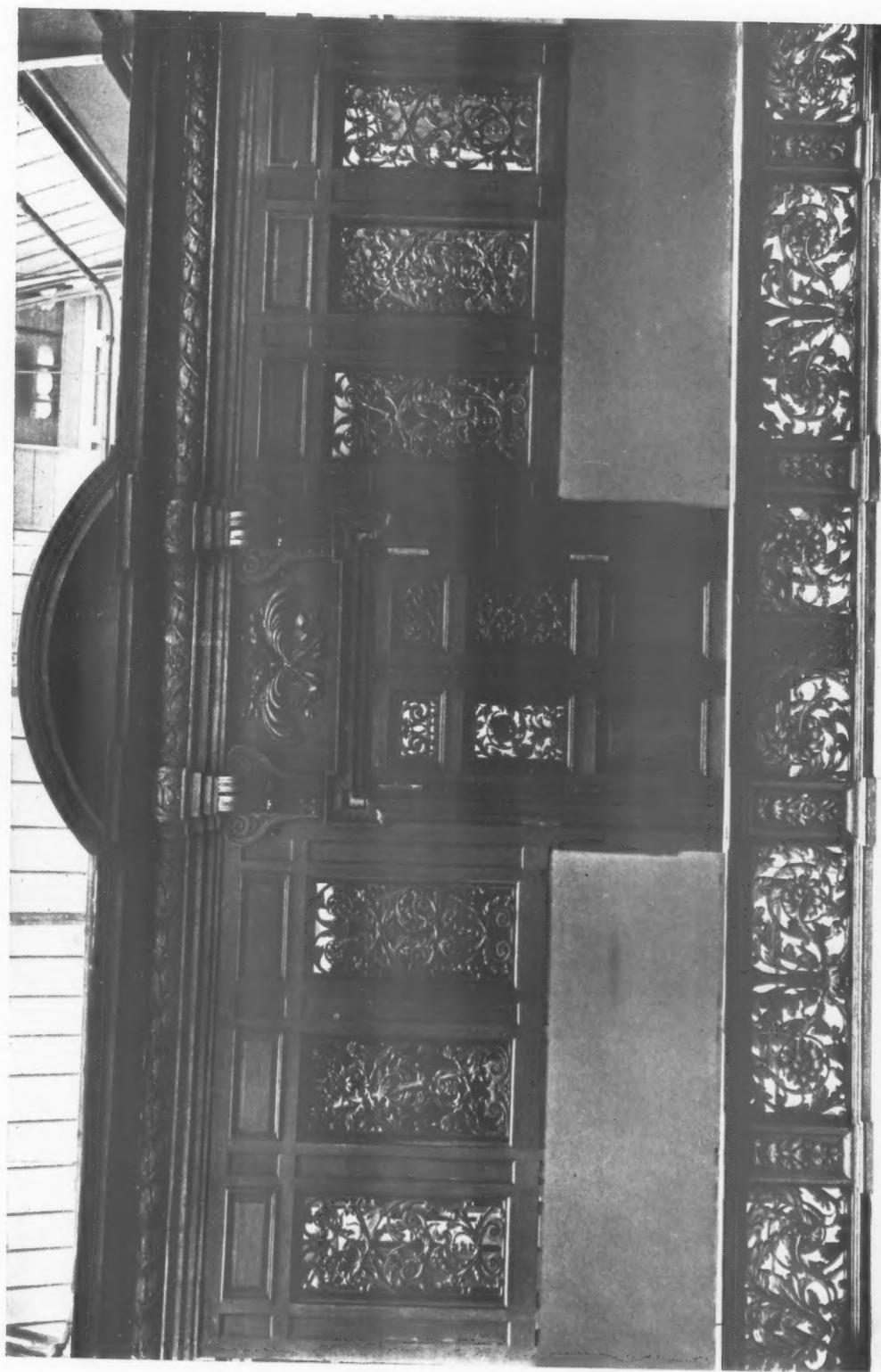
Photo: Cyril Ellis.

ALL SAINTS' CHURCH, KENSINGTON. SOUTH AISLE.
G. F. BODLEY, R.A., ARCHITECT.

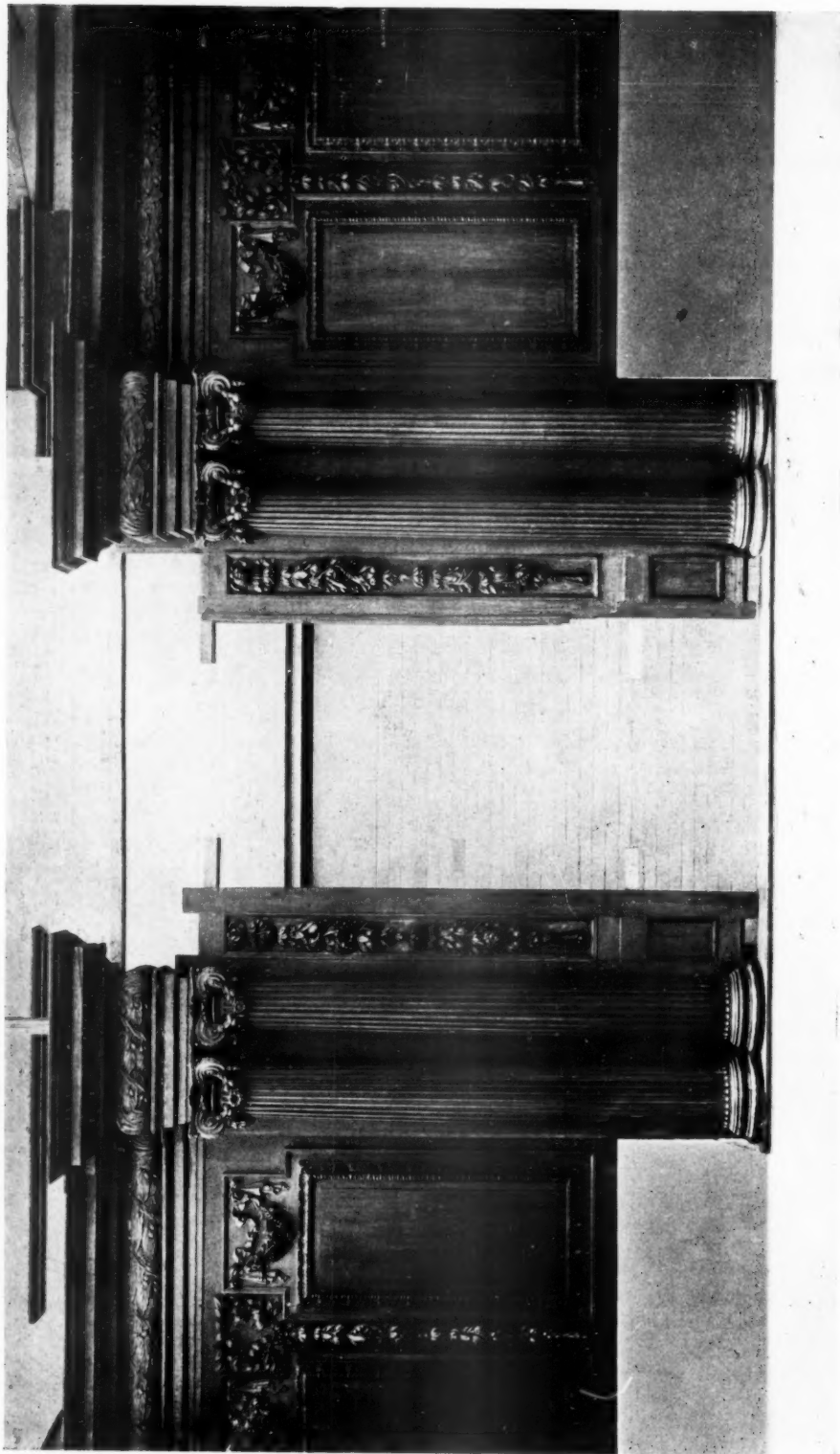


PANELLING AND CARVING FORMERLY IN WINCHESTER COLLEGE CHAPEL,
NOW REFITTED IN THE HALL AT HURSLEY PARK.

See Notes, page 132.



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